0794

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CHEMICAL RESEARCH • SYSTEMS ANALYSIS • COMPUTER SCIENCE • CHEMICAL ENGINEERING

125

The findings and conclusions set forth in this report are based in part on information furnished by others and in part on estimates made in accordance with published formulae. Such findings and conclusions are intended to provide reasonably accurate information concerning emission of pollutants in the State of Louisiana as a whole, but Radian Corporation itself makes no warranty or representations concerning the accuracy of any individual plant or company figures and disclaims any liability or responsibility related thereto.

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16. Abstracts

The following five pollutants were considered: (1) Sulfur compounds (SO_2, SO_3); (2) Particulates; (3) Carbon monoxide; (4) Nitrogen oxides (NO, NO_2); and (5) Hydrocarbons and their derivatives. The data is presented by Air Quality Control Regions. There are three of these regions in Louisiana. A Universal Transverse Mercator grid system was used in locating the emission sources for the state and the three areas studied: New Orleans, Baton Rouge, and Lake Charles. Data was accumulated in two main categories: (1) Area sources and (2) Point sources. Area sources include the small polluters such as residential and commercial fuel combustion, on-site solid waste disposal, and transportation emissions. Point sources include the larger polluters such as manufacturing establishments.

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Details of illustrations in
this document may be better
studied on microfiche.

FINAL REPORT FOR
STATEWIDE EMISSIONS INVENTORY
FOR THE
STATE OF LOUISIANA

To:

Edward J. Lillis, Acting Chief
Surveillance Section
Plans Management Branch
Division of Compliance
Bureau of Stationary Source Pollution Control
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CHEMICAL RESEARCH • SYSTEMS ANALYSIS • COMPUTER SCIENCE • CHEMICAL ENGINEERING

ABSTRACT

Radian Corporation was contracted by the Environmental Protection Agency to provide technical and clerical assistance to the State of Louisiana in development of a statewide emissions inventory.

As part of this assistance, Radian worked with the staff of the Louisiana Air Control Commission to define total emissions and sources of air pollution within the State. As contractors, Radian's responsibilities were to assist the Louisiana Air Control Commission in development of a mailing list of potential point sources, collect fuel and refuse data as well as data to apportion area source emissions, calculate emissions, and prepare the data into a final report.

The purpose of the final report is to fulfill that part of Federal requirements for the preparation, adoption, and submittal of an Implementation Plan.

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I. INTRODUCTION

The Clean Air Act provides for an intergovernmental system for the prevention and control of air pollution on a regional basis. The EPA Office of Air Programs is responsible for designing Air Quality Control Regions (AQCR) and issuing air quality criteria and reports on control techniques. State governments are then expected to establish air quality standards for the AQCR in their jurisdictions and adopt plans for the implementation of these standards.

One of the major elements required in the development of an implementation plan is a complete statewide emissions inventory. Radian Corporation is under contract to the Environmental Protection Agency to provide assistance to the State of Louisiana in development of such an emissions inventory. This report describes the work accomplished by the Louisiana Air Control Commission and Radian during the period 1 May 1971 through 8 September 1971.

When preparing the complete emissions inventory for the State of Louisiana, the following five pollutants were considered:

1. Sulfur Compounds (SO_2, SO_3)

2. Particulates

3. Carbon Monoxide

4. Nitrogen Oxides (NO, NO_2)

5. Hydrocarbons and their derivatives

The data is presented by Air Quality Control Regions. There are three of these regions in Louisiana. A Universal Transverse Mercator grid system was used in locating the emission sources for the state and the three areas studied: New Orleans, Baton Rouge, and Lake Charles.

Data was accumulated in two main categories: (1) Area sources and (2) Point sources. Area sources include the small polluters such as residential and commercial fuel combustion, on-site solid waste disposal, and transportation emissions. Point sources include the larger polluters such as manufacturing establishments.

A mailing list for possible point sources was compiled using the 1970 Louisiana Directory of Manufacturers.

After the emissions were calculated, the point sources were located by their Universal Transverse Mercator System coordinates.

The area source emissions were calculated from fuel combustion and solid waste disposal data that was apportioned to that particular area. The techniques used for apportioning this data are described in the Methodology Section of this report.

Finally, emissions for each Air Quality Control Region were summed from the area and point source calculations.

II. AREA DESCRIPTION

The emissions inventory was conducted throughout the State of Louisiana. Map D of this report presents the UTM grid system used for the State of Louisiana to uniquely locate point and area sources.

The EPA Office of Air Programs is responsible for designating Air Quality Control Regions (AQCR) and political jurisdictions within an AQCR. Air quality criteria and reports on control techniques are issued for specific AQCR. Map E of this report presents the three uniquely numbered AQCR containing the State of Louisiana and the uniquely numbered political jurisdictions within each AQCR.

Grid systems for the New Orleans, Baton Rouge, and Lake Charles area, located within AQCR 106 are presented on Maps A, B, and C of this report. The smaller grids on these maps (6.25 Km^2 and 25 Km^2) cover the areas of high air pollution potential. The larger grids (100 Km^2) cover rural areas of low pollution, other than possible larger individual sources.

III. DESCRIPTION OF TASK

This section of the report describes in detail the steps taken to provide a complete statewide emissions inventory for the State of Louisiana.

A. Review of Available Data

All of the registration forms on file with the Louisiana Air Control Commission (LACC) as of 19 May 1971 were reviewed for content and completeness. This amounted to some 300 forms. These forms were xeroxed and returned to LACC in New Orleans. This type of emission inventory form handling was continued throughout the project, enabling Radian to compile a complete duplicate file of registration forms for the State. In this manner, most problems arising from data on the forms could be resolved by telephone.

B. Development of Mailing List and Questionnaire Mail-Out

Mailing List

A mailing list was compiled by LACC and Radian from the 1970 Louisiana Directory of Manufacturers[1]. A total of 1215 manufacturers and industries were included in the mailing list.

Questionnaire Mail-Out

For the State of Louisiana, the questionnaires mailed were blank emissions inventory forms which had previously been used by the LACC. Along with the forms there was also mailed a cover letter which had been prepared by the LACC. A copy of the LACC form and cover letter is exhibited in Appendix V.

A computerized data base for the Louisiana Emissions Inventory was compiled from the mailing list and from the 300 registration forms originally received. This data base was used to maintain a status list for all industries in contact with the Louisiana Air Control Commission. Substantial use of this data base enabled Radian to maintain an up-to-date account of returned registration forms.

As of 1 September 1971, 1215 companies had been contacted by LACC for the emissions inventory. Of these, 822 companies had complete registration forms and were considered qualified point sources. In addition, the following information was compiled.

a. 63 companies had incomplete forms.

b. 32 companies were out of business.

c. 305 companies were negligible.

d. 330 companies either failed to return the registration forms or were nonexistent according to the U.S. Post Office.

Of the 330 companies failing to return the registration forms, only 33 companies employed over 100 people. Appendix IV is a detailed summary of the status book, as of 1 September 1971.

C. Data Collection to Calculate and Apportion Area Emissions by Source Category

Residential Fuels

The quantities of residential fuels consumed were calculated from information published in the 1969 Mineral Industry Surveys[2], and these consumption totals were apportioned according to population counts published in the 1970 Census of Population[3].

Commercial and Institutional Fuel

The quantities of commercial and institutional fuels consumed were calculated from information published in the 1969 Minerals Industry Surveys[2], and these consumption totals were apportioned according to population statistics published in the 1970 Census of Population[3].

Industrial Fuel

The quantities of industrial fuels consumed were calculated from information published in the 1969 Mineral Industry Surveys[2], and these consumptions were apportioned according to manufacturing statistics published in the 1967 Louisiana Manufacturing Area Statistics[4].

Sugar Cane Field Burning

Information on sugar cane field burning was acquired through the American Sugar Cane League of U.S.A., Inc., in New Orleans.

Gasoline Evaporation

Information on gasoline sales was acquired through the Louisiana Department of Revenue, and was apportioned in the gridded cities by vehicle-mile data published in transportation studies.[5,6,7]

Vessel and Railroad Fuel

Vessel and railroad fuel consumptions were calculated from data published in the *Mineral Industry Surveys*[8], and apportioned according to distances taken from U.S. Geological Survey maps.

Gasoline and Diesel Fuels

Information on gasoline sales and diesel sales was acquired through the Louisiana Department of Revenue, and was apportioned in the gridded cities by vehicle-mile data published in transportation studies.[5,6,7]

Cotton Ginning

Information on the quantity of cotton ginned by each parish in Louisiana was acquired from the Bureau of Census publication entitled Cotton Ginnings[8].

LPG

Liquefied Petroleum Gas information was taken from the 1969 Mineral Industry Surveys[2] and apportioned by population information published in the 1970 Census of Population[3].

D. Contacting of Non-Respondents

On 22 August 1971, the status book of companies in contact with the LACC was reviewed to determine a priority list for recontact by the State with the assistance of Radian. Non-respondent companies employing one hundred or more people were mailed new forms. Of these 103 companies recontacted, 70 companies responded.

E. Determination of the Grid Systems

In Louisiana, the three areas of New Orleans, Baton Rouge, and Lake Charles were chosen for further study. These areas were gridded using grid sizes of 2.5, 5 and 10 Km on a side. Placement of the grids was determined by population density, land-use maps and topographical considerations. Maps A, B, and C of this report presents the grid systems as well as a point source reference for the gridded areas.

F. Calculation of Point Source Emissions, Actual and Allowable

Calculation of point source emissions for companies in Louisiana was performed either by hand at Radian or by using the Point Source Program provided by the Office of Air Programs (OAP). The hand-calculated emissions are based on the Air Pollutant Emissions Inventory Techniques[9] manual, the Emission Factors[10] manual, and on instructions from OAP on recording the point source emissions on forms provided by them.

A criteria of 1 ton/year of any of the five major pollutants was used to determine the qualification of an emissions source as a point source. This criteria was used unless the source was included in the list of major sources presented in Appendix I. Any company whose nature of business was included in this list was considered as a qualified point source regardless of size.

Allowable emissions based upon Louisiana regulations[11] and based upon the Model Regulations presented in the Federal Register[12] were also calculated and recorded on the OAP forms.

G. Calculation of Area Source Emissions

Calculations of the area source emissions for the three AQCR, New Orleans, Baton Rouge and Lake Charles were performed either by hand at Radian, or by using the Area Source Program provided by the Office of Air Programs (OAP). These emissions are reported by parish within each AQCR and by grid in the three city-areas. The techniques used for area source emission calculations were derived from the same manuals as used in the point source calculations.

H. Print-Out and Review of Point and Area Source Data

Radian had all the data for point and area source calculations keypunched and run through the OAP programs previously mentioned. Appendix II and Appendix III contain summaries by source category for each AQCR which were derived from the point and area source emissions output.

IV. METHODOLOGY USED IN COMPLETING THE PARISH AREA SOURCE EMISSION FORMS

A. Residential Fuels

Coal and Fuel Oil

According to the Mineral Industry Surveys[a] published by the Bureau of Mines, the residential use of coal and fuel oil in Louisiana is very small and therefore insignificant. For this reason the residential use of those two fuels was considered zero (0.0).

Natural Gas

Data on the residential usage of natural gas was calculated from information published in the Bureau of Mines' Mineral Industry Survey[a]. The Bureau of Mines information on fuels was for 1969; therefore, the natural gas data had to be adjusted to yield 1970 figures. This adjustment was made by assuming that the Louisiana residential natural gas usage increase from 1969 to 1970 was the same as the National residential natural gas usage increase from 1968 to 1969, and by employing the following methods:

$$\frac{\text{1969 N. Gas Usage}}{\text{1968 N. Gas Usage}} = \frac{4{,}728 \times 10^9 \text{ SCF}}{4{,}450 \times 10^9 \text{ SCF}} = 1.065$$

$$\begin{aligned}\text{1970 N. Gas Usage} &= 1.065 \times 82965 \text{ MMSCF} \\ &= 88{,}358 \text{ MMSCF for the state}\end{aligned}$$

This adjusted Louisiana residential natural gas usage figure was then apportioned to the three air control regions by population.

Population of Louisiana	3,641,306
Population of Region 106	2,801,915

$$1970 \text{ N. Gas Usage for Reg.106} = \left(\frac{2,801,915}{3,641,306}\right) \times 88,358$$

$$= 67,990 \text{ MMSCF}$$

B. Commercial and Institutional Fuels

Coal

According to the 1969 Mineral Industry Surveys[8], published by the Bureau of Mines, the commercial and institutional consumption of coal in the State of Louisiana was very small. Therefore commercial and institutional consumption of coal was omitted from the area source study.

Residual Oil

Data for the commercial and institutional consumption of residual oil was obtained from the 1969 Mineral Industry Surveys[8] published by the Bureau of Mines. For the State of Louisiana the Mineral Industry Surveys did not list the 1968 consumption of residual oil for commercial and institutional use. For this reason, the 1969 residual oil usage by commercial and institutional establishments was adjusted to serve as a 1970 figure, by assuming a 7.9% usage increase. This increase of 7.9% was the overall national residual oil sales increase for 1969.

1970 Res. Oil Usage = 1969 Res. Oil Usage x (100% + 7.9%)
= 252×10^3 gal. x 1.079
= 272×10^3 gal.

To find the quantity of residual oil used in each region, the 1970 residual oil usage for commercial and institutional establishments was proportioned by the urban population in each region.

$$\frac{\text{Urban Population Region 106}}{\text{Total State Urban Population}} = \frac{1,926,778}{2,406,150}$$

$$= 0.8008$$

Reg. 106 Res. Oil Usage = $0.8008 \times 272 \times 10^3$ gal
= 218×10^3 gal

Distillate Oil

Data for the 1970 commercial and institutional usage of distillate fuel oil was derived from information in the 1969 Mineral Industry Surveys[2]. According to these surveys, the 1968 and 1969 commercial and institutional usages of distillate fuel oils was $13,944 \times 10^3$ gallons and $27,594 \times 10^3$ gallons, respectively. By using this data in the following manner, the 1969 commercial and institutional distillate fuel oil data was adjusted to yield a 1970 commercial and institutional distillate fuel oil consumption.

$$\text{1970 Com. and Ind. usage} = \frac{27{,}594}{13{,}944} \times 27{,}594 \times 10^3 \text{ gallons}$$

$$= 54{,}606 \times 10^3 \text{ gallons}$$

To find the quantity of distillate fuel oil used by commercial and institutional establishments in each air quality region, the 1970 commercial and industrial usages for the whole state were multiplied by the fraction of urban population living in that air quality region.

$$\frac{\text{Urban Population Region 106}}{\text{Total State Urban Population}} = \frac{1{,}926{,}778}{2{,}406{,}150}$$

$$= 0.8008$$

$$\text{Region 106 Com. and Ind. Usage} = 0.8008 \times 54{,}606 \times 10^3 \text{ gallons}$$

$$= 43{,}728$$

Natural Gas

Data for the commercial and institutional consumption of natural gas was calculated from information obtained in the 1969 Mineral Industry Surveys[8] published by the Bureau of Mines. According to the survey 32,680 MMSCF of natural gas was consumed by commercial and institutional establishments in 1969. The survey also stated that the commercial consumption was 8.5% greater than the 1968 commercial consumption. Using this information, and assuming an 8.5% increase in consumption again in 1970, the 1970 commercial and institutional consumption of natural gas was calculated as follows:

1970 Com. & Inst. Consumption = 1.085 x 32,680 MMSCF

= 35,458 MMSCF

To find the commercial and institutional consumption of natural gas for each air quality control region, the 1970 state commercial and institutional consumptions were multiplied by the fractional urban population of each region.

$$\frac{\text{Urban Population Region 106}}{\text{Total State Urban Population}} = \frac{1,926,778}{2,406,150}$$

$$= 0.8008$$

Region 106 Com. and Ins. Nat. Gas = 0.8008 x 35,458 MMSCF

= 28,395 MMSCF

C. Industrial Fuels

Coal

The industrial usage of coal in Louisiana was reported to be very small, and as a result, was omitted from this study.

Industrial Fuel Oils and Natural Gas

The only figures available on the industrial consumption of fuel oils and natural gas were those of the Mineral Industry Surveys[2] which were based on fuel sales. One of the largest fuel oil and natural gas users are the petroleum companies who use their own products. Because of this incompleteness of the available data, and the fact that most of the industrial consumption of fuels was accounted for in the point source studies, industrial consumption of fuel oil and natural gas has been omitted from the area source study.

D. Transportation Sources

Vessel Fuel Consumption

Vessel fuel consumption data was derived from information found in the Mineral Industry Surveys[2] published in 1969. According to the surveys, there were 482,076 M gallons of vessel fuel sold in Louisiana in 1968, and 493,878 M gallons of vessel fuel sold in Louisiana in 1969. By combining this information in the following manner, and by assuming a steady percentage increase in fuel consumption each year, a figure for the total state vessel fuel consumption was reached.

$$\text{1970 Vessel Fuel Usage} = \frac{\text{493,878M gal.}}{\text{482,076M gal.}} \times \text{493,878 M gal.}$$

$$= \text{505,939 M gallons}$$

To calculate the level of vessel fuel consumption in each air quality control region, the 1970 vessel fuel consumption was multiplied by the fraction of vessel trip miles made per year in each region. The vessel trip miles was derived as shown below from vessel data found in a publication received from the Army Corps of Engineers entitled Waterborne Commerce of the United States.[13]

Vessel trips between New Orleans and Baton Rouge = 111,053
River miles between New Orleans and Baton Rouge = 162

Vessel trip miles between New Orleans and Baton Rouge

$$= 111{,}053 \times 162$$

$$= 17{,}990{,}586 \text{ trip miles}$$

$$\text{Region 106 Vessel Fuel} = \frac{\text{Reg.106 Trip Miles}}{\text{State Trip Miles}} \times \text{State Vessel Fuel Use}$$

$$= \frac{42{,}038{,}750}{55{,}277{,}389} \times 505{,}929 \text{ M gallons}$$

$$= 384{,}759 \text{ M gallons}$$

This regional vessel fuel usage was then apportioned to each parish in the region by the method explained in Section VI.

Railroad Fuel Consumption

Railroad fuel consumption data was calculated from information in the 1969 Mineral Industry Surveys[a]. This publication showed that the 1968 and 1969 Louisiana railroad fuel consumptions were 42,084 M gallons and 40,908 M gallons respectively. By using these two figures, and by assuming an equal decrease in 1970 as in 1969, a 1970 state total railroad fuel usage was calculated.

$$\text{1970 Louisiana R.R. fuel use} = \frac{40{,}908 \text{ M gal.}}{42{,}084 \text{ M gal.}} \times 40{,}908 \text{ M gallons}$$

$$= 39{,}764 \text{ M gallons}$$

This 1970 state railroad fuel consumption was apportioned to each air quality control region according to the number of miles of track existing in that region. The figure for the miles of track in each air quality control region was taken from U.S.G.S. survey maps, and used in the following manner:

miles of track in Reg. 106 = 2,898 miles
miles of track in state = 4,509 miles

$$\text{Reg. 106 Railroad Fuel Usage} = \frac{2898}{4509} \times 39{,}764 \text{ M gallons}$$

$$= 25{,}556 \text{ M gallons}$$

This regional railroad fuel usage was then apportioned to the parishes in the region by the computer program according to the method outlined in Section VI.

Diesel Motor Vehicles

Total state diesel fuel consumption in 1970 for the State of Louisiana was obtained from the Louisiana State Department of Revenue. It was assumed that the fractions of diesel fuel consumed in each air quality control region was proportional to the fractions of gasoline consumed in each air quality control region, and the regional diesel motor vehicle data was calculated in the following manner:

Region 106 gasoline sales = 1,058,133 M gallons
Total Louisiana gasoline sales = 1,427,403 M gallons
Total Louisiana diesel fuel sales = 91,003 M gallons

$$\text{Region 106 diesel consumption} = \frac{1,058,133}{1,427,403} \times 91,003 \text{ M gallons}$$

$$= 67,451 \text{ M gallons}$$

The regional totals for diesel fuel consumption were then apportioned to the parishes of that region by the computer program according to the method outlined in Section VI.

Gasoline Motor Vehicles

Gasoline motor vehicle emissions were calculated on gallons of gasoline burned rather than on vehicle miles because of the form of the available data. Gasoline sales for 1970 by parish were obtained from the State of Louisiana Department of Revenue. Finding the total quantity of gasoline consumed within an air quality control region involved only summing up the parish gasoline sales for each parish in the air quality control region.

E. Miscellaneous Area Sources

Sugar Cane Field Burning

Data on sugar cane field burning was obtained from the American Sugar Cane League of U.S.A., Inc. in the form of acres of sugar cane planted in 1970 by parish. The American Sugar Cane League of U.S.A., Inc. also stated that almost all of the sugar cane fields planted were burned at the end of the season. Based on this information, it was assumed that 100% of the sugar cane fields were burned, and the air quality control region totals were found by simply summing up the parish figures on acreage burned in each region.

Gasoline Evaporation

Gasoline evaporation occurs in the various steps of gasoline marketing, and is therefore a function of the quantity of gasoline sold. Since figures on the quantity of gasoline sold in each parish for the year of 1970 were available, the portion of gasoline sold in each air quality control region was found by simply summing up the gasoline sales for each parish of the region.

Liquefied Petroleum Gases

Information on the 1970 consumption of liquefied petroleum gases was derived from the 1969 Mineral Industry Surveys[8] published by the Bureau of Mines. These surveys showed that the sales of liquefied petroleum gases in 1968 and 1969 for the State of Louisiana were 200,213 M gallons, and 265,680 M gallons respectively. By assuming a steady increase in sales for 1970, and by using the following technique, a 1970 consumption of liquefied petroleum gases for the State of Louisiana was estimated;

$$\text{Louisiana 1970 sales of LPG} = \frac{265{,}680}{200{,}213} \times 265{,}680 \text{ M gallons}$$

$$= 352{,}554 \text{ M gallons.}$$

Allotting of the 1970 sales of liquefied petroleum gases in Louisiana to each air quality control region was done on the basis of rural population. This is due to the fact that rural communities consume over 75% of Louisiana's liquefied petroleum gases.

$$\text{Region 106 LPG Sales} = \frac{\text{Reg. 106 rural population}}{\text{State rural population}} \times \text{1970 LPG Sales}$$

$$= \frac{875{,}138}{1{,}235{,}156} \times 352{,}554 \text{ M gallons}$$

$$= 249{,}793 \text{ M gallons}$$

Proportioning these 1970 air quality control region sales to each parish was done according to the methods demonstrated in Section VI of this report.

Cotton Ginning

Because of the unavailability of information on individual cotton gins due to confidentiality, and the availability of 1970 parish totals for cotton ginning, it was decided to make cotton gins an area source. Emissions for each air quality control region were then found by summing up the bales of cotton ginned in each parish of that region. The information on cotton gins was obtained from Cotton Ginnings[8], a 1970 Bureau of Census publication.

F. Hand Calculated Emissions

The only area source emissions calculated by hand were those for airports. Inquiries were sent out to major airports as to the number of landings and takeoffs, and types of planes involved in the operations. The emission factors listed in Air Pollutant Emission Factors[10] by Duprey were used to calculate airplane emissions from the information supplied by the airports.

V. METHODOLOGY USED IN COMPLETING THE GRIDDED AREA EMISSIONS FORMS

A. Residential Fuels

Coal and Fuel Oil

According to the Mineral Industry Surveys[a] published by the Bureau of Mines, the residential use of coal and fuel oil in Louisiana is very small and therefore insignificant. For this reason, the residential use of these two fuels was considered zero.

Natural Gas

The quantity of residential natural gas consumed in each gridded area was found by proportioning a fraction of the total 1970 state natural gas sales to each gridded area according to population.

$$\begin{aligned}\frac{\text{Population of Gridded New Orleans}}{\text{Population of Louisiana}} &= \frac{852{,}454}{3{,}641{,}306}\\ &= .2341\\ \text{1970 New Orleans Nat. Gas Usage} &= .2341 \times \text{state usage}\\ &= .2341 \times 88{,}358 \text{ MM SCF}\\ &= 20{,}685 \text{ MM SCF}\end{aligned}$$

These 1970 gridded area usages of natural gas were then apportioned to each individual grid by the method explained in Section VI of this report.

B. Commercial and Institutional Fuels

Coal

According to the 1969 Mineral Industry Surveys[8], published by the Bureau of Mines, the commercial and institutional consumption of coal in the State of Louisiana was very small. Therefore, commercial and institutional consumption of coal was omitted from the gridded area emission study.

Residual Oil

The quantity of commercial and institutional residual oil used in each gridded area was found by apportioning a fraction of the total 1970 Louisiana residual oil sales according to the gridded area's population.

$$\frac{\text{Population of Gridded New Orleans}}{\text{Population of Louisiana}} = \frac{852{,}454}{3{,}641{,}306}$$

$$= .2341$$

$$\text{1970 New Orleans Res. Oil Usage} = .2341 \times \text{state usage}$$

$$= .2341 \times 272 \text{ M gallons}$$

$$= 64 \text{ M gallons}$$

This quantity of commercial and residual oil for each gridded area was then apportioned to each grid by a method exhibited in Section VI of this report.

Distillate Oil

The quantity of distillate oil used by commercial and institutional establishments was calculated by apportioning a fraction of the total 1970 Louisiana state sales of distillate oil according to population.

$$\frac{\text{Population of Gridded New Orleans}}{\text{Population of Louisiana}} = \frac{852{,}454}{3{,}641{,}306}$$

$$= .2341$$

1970 New Orleans Dist. Oil Usage = .2341 x state usage

= .2341 x 54,606 M gallons

= 12,783 M gallons

Natural Gas

The 1970 gridded area consumption of natural gas by commercial and institutional establishments was calculated by apportioning a fraction of the 1970 total Louisiana commercial and institutional natural gas sales according to population.

$$\frac{\text{Population of Gridded New Orleans}}{\text{Population of Louisiana}} = \frac{852{,}454}{3{,}641{,}306}$$

$$= .2341$$

1970 New Orleans Nat. Gas Usage = .2341 x state usage
= .2341 x 35,458 MM SCF
= 8,301 MM SCF

The 1970 gridded area commercial and institutional consumption of natural gas was then apportioned to each individual grid by population, in the manner explained in Section VI of this report.

C. Industrial Fuels

Coal

The industrial usage of coal in Louisiana was reported by the Mineral Industry Surveys[8] to be very small, and therefore it was omitted from this study.

Industrial Fuel Oils and Natural Gas

The only information available on the industrial consumption of fuel oil and natural gas was based on fuel sales. This means that one of the largest fuel users, the petroleum industry, is omitted from the statistics since they do not sell to themselves. For this reason, and also the fact that most of the industrial fuels were accounted for on the point source forms, the consumption of industrial fuel oils and natural gas was omitted from the area source study.

D. Transportation Sources

Vessel Fuel Consumption

Vessel fuel consumption for the gridded areas was calculated assuming that the vessel traffic along the Mississippi River in New Orleans was equal to the vessel traffic along the Mississippi River between New Orleans and Baton Rouge. The fraction of total Louisiana vessel traffic occurring in New Orleans was then multiplied times the 1970 Louisiana consumption of vessel fuel.

Vessel trips between New Orleans and Baton Rouge = 111,053 trips
Miles of harbor in New Orleans = 21.8 miles

Vessel traffic in New Orleans = trips x miles
= 111,053 x 21.8
= 2,420,955 trip-miles

Total Louisiana vessel traffic = 55,277,389 trip-miles

1970 Louisiana vessel fuel consumption = 505,929 M gallons

$$\text{1970 New Orleans vessel fuel usage} = \frac{2,420,955}{55,277,389} \times 505,929 \text{ M gallons}$$

$$= 22,157 \text{ M gallons}$$

These gridded area vessel fuel consumptions were then apportioned to each individual grid by the miles of the Mississippi River existing in each grid. This method is further explained in Section VI of this report.

Railroad Fuel Consumption

The quantity of fuel consumed by the railroads in each gridded area was calculated by multiplying the fraction of track miles existing in the area times the quantity of fuel consumed by railroads in Louisiana in 1970. The track-miles for both the State of Louisiana, and the gridded areas were taken from United States Geological Survey Maps.

Miles of railroad track in New Orleans = 260 track-miles
Miles of railroad track in Louisiana = 4507 track-miles
1970 Louisiana railroad fuel consumption = 38,205 M gallons

$$\text{1970 New Orleans railroad fuel usage} = \frac{260}{4{,}507} \times 38{,}205 \text{ M gallons}$$

$$= 2{,}204 \text{ M gallons}$$

The quantity of fuel consumed by the railroads in each grid was then calculated by apportioning the total gridded area quantity of railroad fuel according to the track miles existing in each grid. This procedure is further explained in Section VI of this report.

Gasoline Motor Vehicles

The quantity of gasoline consumed in each gridded area was calculated by apportioning the 1970 parish gasoline sales according to population.

Population of Orleans parish in the gridded city = 590,000
Total population of Orleans parish = 593,471
1970 gasoline sales in Orleans parish = 166,107 M gallons

1970 gasoline sales in the Orleans portion of New Orleans $= \frac{590,000}{593,471} \times 166,107$ M gallons

$= 165,135$ M gallons

Population of Jefferson parish in gridded area = 297,427

Total population of Jefferson parish = 337,568

1970 gasoline sales in Jefferson parish = 126,499 M gallons

1970 gasoline sales in the Jefferson portion of New Orleans $= \frac{297,427}{337,568} \times 126,499$ M gallons

$= 111,456$ M gallons

Total gasoline consumption in New Orleans = 111,456 + 165,135

= 276,591 M gallons

The quantity of gasoline consumed in each individual grid was calculated by apportioning the total gridded area gasoline consumption to the grids according to vehicle mile data. This procedure is explained in Section VI of this report.

Diesel Motor Vehicles

According to the Louisiana State Department of Revenue, the 1970 diesel consumption in Louisiana was 91,000,857 gallons which is 6.27% of the gasoline sales. Since this was the only available information, the 1970 diesel consumption for each gridded area was calculated by multiplying 6.27% times the gasoline sales of the gridded area.

1970 New Orleans gasoline consumption = 276,591 M gallons
1970 New Orleans diesel consumption = .0627 x 276,591 M gallons
= 17,342 M gallons

The quantity of diesel fuel consumed in each individual grid was then calculated by apportioning the total gridded area diesel fuel consumption to the grids according to vehicle mile data. This procedure is explained in Section VI of this report.

E. Miscellaneous Area Sources

Gasoline Evaporation

Gasoline evaporation occurs during the various stages of gasoline marketing, and is a direct function of the quantity of gasoline sold. Assuming that the quantity of gasoline sold in each gridded area is equal to the quantity of gasoline consumed in that gridded area, gridded area gasoline consumption figures were also used as gridded area gasoline marketing figures.

The quantity of gasoline marketed in each individual grid was calculated by using vehicle-mile information in the same manner that the gasoline consumption in each individual grid was calculated. This method is further explained in Section VI of this report.

VI. METHODOLOGY USED IN APPORTIONING THE REGIONAL SOURCES TO THE PARISHES, AND THE AREA SOURCES TO THE GRIDS

Once the quantities of fuels and other emission sources were found for the air quality control regions and the gridded areas, these emission sources were apportioned among the parishes and grids by the computer program using an apportioning factor technique. Table I lists the apportioning factors used with each emission source, and an example of the apportioning factor technique is demonstrated in the following example:

The 1970 residential natural gas consumption for air quality control region 106 was 67,990 MM SCF. According to Table I the apportioning factor used for residential natural gas was parish population x 10^{-1}. For Acadia parish whose population is 52,109 people, the factor entered with the computer program would be 5211. To find the quantity of residential natural gas consumed in Acadia parish the computer program would sum up the population of each parish in the region, divide it into 5211 and then multiply it times the total 1970 residential natural gas consumption of region 106. This is shown below.

Population of Acadia Parish	52,109
Acadia Parish Population Factor	5,211
Sum of Region 106 Population Factors	280,192
1970 Residential Natural Gas Usage	67,990 MM SCF

$$\text{Acadia Parish Natural Gas Usage} = \frac{5,211}{280,192} \times 67,990 \text{ MM SCF}$$

$$= 1,264 \text{ MM SCF}$$

TABLE I

APPORTIONING FACTORS USED BY THE EMISSIONS INVENTORY COMPUTER PROGRAM

Emission Source	Apportioning Factor
Regional Study	
Residential	
Coal	Omitted from the Study
Fuel Oil	Omitted from the Study
Natural Gas	Parish Population x 10^{-1}
Commercial and Institutional	
Coal	Omitted from the Study
Residual Oil	Parish Urban Population x 10^{-1}
Distillate Oil	Parish Urban Population x 10^{-1}
Natural Gas	Parish Urban Population x 10^{-1}
Industrial	
Coal	Omitted from the Study
Residual Oil	Parish Manufacturing Employees x 10^{-}
Distillate Oil	Parish Manufacturing Employees x 10^{-}
Natural Gas	Parish Manufacturing Employees x 10^{-}
Wood	Omitted from the Study
Sugar Cane Field Burning	Parish Acres of Sugar Cane Planted
Incineration	Omitted from the Study
Gasoline Evaporation	Parish Gasoline Sales x 10^{-4} Gallons
Vessel Fuel	Vessel-Miles in Parish x 10^{-4}
Railroad Fuel	Miles of Railroad Track in Parish
Diesel Motor Vehicle	Parish Gasoline Sales x 10^{-4} Gallons
Liquid Petroleum Gas	Parish Rural Population x 10^{-1}
Gasoline Sales	Parish Gasoline Sales x 10^{-4} Gallons
Cotton Ginning	Bales of Cotton Ginned in Parish

TABLE I (Cont'd)

Emission Source	Apportioning Factor
Gridded City Study	
Residential	
Coal	Omitted from the Study
Fuel Oil	Omitted from the
Natural Gas	Grid Population
Commercial and Institutional	
Coal	Omitted from the Study
Residual Oil	Grid Population
Distillate Oil	Grid Population
Natural Gas	Grid Population
Industrial	
Coal	Omitted from the Study
Residual Oil	Area of Industrial Establishments
Distillate Oil	Area of Industrial Establishments
Natural Gas	Area of Industrial Establishments
Wood	Omitted from the Study
Open Burning	Omitted from the Study
Incineration	Omitted from the Study
Gasoline Evaporation	Vehicle-Miles in the Grid x 10^{-1}
Vessel Fuel	River Miles in the Grid x 10^{2}
Railroad Fuel	Miles of Track in the Grid x 10^{2}
Diesel Motor Vehicles	Vehicle-Miles in the Grid x 10^{-1}
Gasoline Sales	Vehicle-Miles in the Grid x 10^{-1}

The apportioning factors listed above were found from the following sources:

Parish Population	- 1970 Census of Population published by the U. S. Bureau of Census.[3]

Parish Urban Population - 1970 *Census of Population* published by the Bureau of the Census.[3]

Parish Manufacturing Employees - 1967 Publication of the *Louisiana Manufacturers Area Statistics*[4] published by the U. S. Bureau of the Census. The 1967 statistics were the only ones available, and it was assumed that the ratio of manufacturing employees in each parish had not changed significantly.

Parish Acres of Sugar Cane Planted - Information on the acres of sugar cane planted in 1970 was obtained from The American Sugar Cane League of U.S.A., Inc. in New Orleans.

Parish Gasoline Sales - Information on the 1970 parish gasoline sales was obtained from the State of Louisiana Department of Revenue.

Vessel Miles in Parish - This information was acquired by multiplying the vessel trips along sections of the Mississippi River times the length of the sections. The vessel trip information came from *Waterborne Commerce of the United States*[13] published in 1969 by the Army Corps of Engineers. The length of the Mississippi River was found from U. S. Geological Survey maps.

Miles of Railroad Track in Parish - This information was taken from U. S. Geological Survey maps.

Parish Rural Population - 1970 *Census of Population*[3] published by the U. S. Bureau of the Census.

Bales of Cotton Ginned in Parish - This information was acquired from a 1970 Bureau of the Census publication *Cotton Ginnings*.[6]

Grid Population - The population in each grid was calculated from 1970 census data acquired from the College of Business Administration at Louisiana Tech University.

Area of Industrial Establishments - The square acres of industrial establishments was acquired from Land Use Maps published in Metropolitan Transportation Studies[5,6,7] by the Louisiana Department of Highways.

Vehicle-Miles in the Grid - Vehicle-mile information was calculated by multiplying vehicle count information on each street of a grid times the length of the street. Vehicle count information was acquired from Metropolitan Transportation Studies[5,6,7] by the Louisiana Department of Highways.

River Miles in the Grid - River miles within each grid were obtained from U. S. Geological Survey maps.

Miles of Track in the Grid - The miles of railroad track within each grid were obtained from U. S. Geological Survey maps.

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11. Louisiana Revised Statutes, Louisiana State Air Control Commission, Baton Rouge, November 1970.

12. Federal Register, Volume 36, No. 67, Environmental Protection Agency, Washington, D.C., April 7, 1971.

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14. Steam-Electric Plant Factors/1970, National Coal Association, Washington, D.C., 1970.

APPENDIX I

Sources Included as Point Sources, Independent of Size

CHEMICAL PROCESS INDUSTRY
- Ammonia
- Chlorine
- Coal Cleaning
- Detergent and Soap
- Hydrofluoric Acid
- Ink Manufacturing
- Paint and Varnish
- Phosphate Fertilizers
- Phosphoric Acid
- Phthalic Anhydride
- Plastics
- Sulfuric Acid
- Synthetic Fibers
- Synthetic Rubber

FOOD AND AGRICULTURAL INDUSTRY
- Alfalfa Dehydrating
- Coffee Roasting
- Cotton Ginning
- Feed and Grain
- Fermentation Processes
- Fish Meal Processing
- Rendering
- Starch Manufacturing

METALLURGICAL INDUSTRY
- Primary Metals Industry
  - Aluminum Ore Reduction
  - Copper Smelters
  - Iron and Steel Mills
  - Lead Smelters
  - Zinc Smelters

- Secondary Metals Industry
  - Aluminum Operations
  - Brass and Bronze Smelting
  - Ferro Alloys
  - Gray Iron Foundry
  - Lead Smelting
  - Magnesium Melting
  - Steel Foundry
  - Zinc Processes

MINERAL PRODUCTS INDUSTRY

- Asphalt Roofing
- Asphaltic Concrete Batch
- Brick and Refractories
- Calcium Carbide
- Carbon Black
- Cement
- Ceramic and Clay Processes
- Charcoal
- Concrete Batching
- Fiber-Glass
- Frit Manufacturing
- Glass Manufacturing
- Gypsum
- Lime
- Paperboard
- Perlite
- Rock Wool
- Rock, Gravel, and Sand Processing

PETROLEUM REFINING

PULP AND PAPER MANUFACTURE

SOLVENT EVAPORATION AND GASOLINE MARKETING
- Dry Cleaning
- Surface Coating Operations
- Gasoline Marketing

MISCELLANEOUS
- Steam-Electric Power Plants
- Municipal or Equivalent Incinerators
- Open Burning Dumps

APPENDIX II

EMISSIONS INVENTORY SUMMARY BY AQCR

EMISSIONS INVENTORY SUMMARY

AQCR 19 Louisiana 1970

	Tons of Pollutant/Year					Fuel, Etc.	
Source Category	Part	SO_2	CO	HC	NO_x	Quantity	Units
I. FUEL COMBUSTION							
A. Residential Fuel Area S.							
1. Anthracite Coal	0	0	0	0	0	0	
2. Distillate Oil	0	0	0	0	0	0	
3. Natural Gas	120	4	126	50	473	12610	10^6 scf
4. Wood	0	0	0	0	0	0	
5. Liquid Petroleum Gas	148	0	155	60	484	48370	10^3 gal
6. Total	268	4	281	110	957		
B. Comm.-Instl. & Ind. Fuel							
1. Bituminous Coal							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
2. Coke - Point Source	0	0	0	0	0	0	
3. Distillate Oil							
a. Area Source	26	65	0	5	102	3408	10^3 gal
b. Point Source	0	0	0	0	0	0	
4. Residual Oil							
a. Area Source	0	4	0	0	1	17	10^3 gal
b. Point Source	23	153	0	3	61	2030	10^3 gal
5. Natural Gas							
a. Area Source	21	1	22	9	83	2212	10^6 scf
b. Point Source	1273	43	29	2849	12376	141663	10^6 scf
6. Process Gas-Point S.	0	0	0	0	0	0	
7. Wood							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
8. Other							

a. Area Source	26	65	0	5	102	3408	10 gal
b. Point Source	0	0	0	0	0	0	
4. Residual Oil							
a. Area Source	0	4	0	0	1	17	10^3 gal
b. Point Source	23	153	0	3	61	2030	10^3 gal
5. Natural Gas							
a. Area Source	21	1	22	9	83	2212	10^6 scf
b. Point Source	1273	43	29	2849	12376	141663	10^6 scf
6. Process Gas-Point S.	0	0	0	0	0	0	
7. Wood							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
8. Other							
a. Area Source	0	0	0	0	0	0	
b. Gasoline- P.S.	2	0	0	4	22		
9. Total	1345	266	51	2870	12645		
C. Steam-Electric Power Plants							
1. Anthracite Coal	0	0	0	0	0	0	
2. Bituminous Coal	0	0	0	0	0	0	
3. Distillate Oil	0	0	0	0	0	0	
4. Residual Oil	0	0	0	0	0	0	
5. Natural Gas	166	6	4	422	4310	22100	10^6 scf
6. Other	0	0	0	0	0	0	
7. Total	166	6	4	422	4310		
D. Total Fuel Combustion	1779	276	336	3402	17912		

MISSIONS INVENTORY SUMMARY - AQCR 19 LOUISIANA 1970

Source Category	Tons of Pollutant/Year					Fuel, Etc.	
	Part	SO_2	CO	HC	NO_x	Quantity	Units
I. PROCESS LOSSES							
A. Area Source	0	0	0	0	0	0	
B. Point Source	392997	12240	204750	75833	3310		
II. SOLID WASTE DISPOSAL							
A. Incineration							
1. On Site							
a. Area Source	0	0	0	0	0	0	
b. Point Source	1233	13	7742	662	86	43499	tons
2. Municipal	0	0	0	0	0	0	
B. Open Burning							
1. On Site							
a. Area Source	0	0	0	0	0	0	
b. Point Source	190	0	559	45	23	7599	tons
2. Dumps							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
C. Wood Boiler	3712	328	262	262	1313	262290	tons
D. Total	5135	341	8563	969	1422		
IV. TRANSPORTATION - AREA SOURCE							
A. Motor Vehicles							
1. Gasoline	859	644	164664	14319	8090	143186	10^3 gal
2. Diesel	112	202	1459	292	1526	8978	10^3 gal
B. Off Highway							
C. Air Craft	258	152	11151	1962	97		
D. Railroad	73	190	205	146	219	5847	10^3 gal

2. Dumps							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
C. Wood Boiler	3712	328	262	262	1313	262290	tons
D. Total	5135	341	8563	969	1422		
IV. TRANSPORTATION - AREA SOURCE							
A. Motor Vehicles							
1. Gasoline	859	644	164664	14319	8090	143186	10^3 gal
2. Diesel	112	202	1459	292	1526	8978	10^3 gal
B. Off Highway							
C. Air Craft	258	152	11151	1962	97		
D. Railroad	73	190	205	146	219	5847	10^3 gal
E. Vessels	1515	17450	3938	3029	4423	121178	10^3 gal
F. Gasoline Handling	0	0	0	1432	0	143186	10^3 gal
G. Other	0	0	0	0	0	0	
H. Total	2817	13638	181417	21180	14355		
V. MISCELLANEOUS							
A. Agricultural Burning	0	0	0	0	0	0	
B. Cotton Ginning	3354	0	0	0	0	372712	Bales
C. Total	3354	0	0	0	0		
VI. GRAND TOTAL							
A. Area Source	6486	18712	181720	21304	15498		
B. Point Source	399496	12873	213346	80080	21501		
C. Total	406082	31495	395066	101384	36999		

EMISSIONS INVENTORY SUMMARY

AQCR 22 Louisiana 1970

Source Category	Tons of Pollutant/Year					Fuel, Etc.	
	Part	SO_2	CO	HC	NO_x	Quantity	Units
I. FUEL COMBUSTION							
A. Residential Fuel Area S.							
1. Anthracite Coal	0	0	0	0	0	0	
2. Distillate Oil	0	0	0	0	0		
3. Natural Gas	74	2	78	31	291	7757	10^6 scf
4. Wood	0	0	0	0	0	0	
5. Liquid Petroleum Gas	166	0	174	68	544	54389	10^3 gal
6. Total	240	2	252	99	835		
B. Comm.-Instl. & Ind. Fuel							
1. Bituminous Coal							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
2. Coke - Point Source	0	0	0	0	0	0	
3. Distillate Oil							
a. Area Source	56	143	1	11	224	7470	10^3 gal
b. Point Source	1	0	0	2	8	480	10^3 gal
4. Residual Oil							
a. Area Source	0	9	0	0	1	37	10^3 gal
b. Point Source	5	95	0	1	12	598	10^3 gal
5. Natural Gas							
a. Area Source	46	1	49	19	182	4851	10^6 scf
b. Point Source	239	8	5	531	2321	38295	10^6 scf
6. Process Gas-Point S.	0	0	0	0	0	0	
7. Wood							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
8. Other							
a. Area Source	0	0	0	0	0	0	

a. Area Source	0	9	0	0	1	37	10^{3} gal
b. Point Source	5	95	0	1	12	598	10^{3} gal
5. Natural Gas							
a. Area Source	46	1	49	19	182	4851	10^{6} scf
b. Point Source	239	8	5	531	2321	38295	10^{6} scf
6. Process Gas-Point S.	0	0	0	0	0	0	
7. Wood							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
8. Other							
a. Area Source	0	0	0	0	0	0	
b. Gasoline- P.S.	277	1248	2	287	1766		
9. Total	623	1504	57	851	4514		
C. Steam-Electric Power Plants							
1. Anthracite Coal	0	0	0	0	0	0	
2. Bituminous Coal	0	0	0	0	0	0	
3. Distillate Oil	0	0	0	0	0	0	
4. Residual Oil	0	0	0	0	0	0	
5. Natural Gas	134	5	4	358	3490	17894	10^{6} scf
6. Other	0	0	0	0	0	0	
7. Total	134	5	4	358	3490		
D. Total Fuel Combustion	997	1511	313	1308	8839		

MISSIONS INVENTORY SUMMARY - AQCR 22 LOUISIANA 1970

Source Category	Tons of Pollutant/Year					Fuel, Etc.	
	Part	SO_2	CO	HC	NO_x	Quantity	Units
I. PROCESS LOSSES							
A. Area Source	0	0	0	0	0	0	
B. Point Source	33411	4137	15296	5349	135		
II. SOLID WASTE DISPOSAL							
A. Incineration							
1. On Site							
a. Area Source	0	0	0	0	0	0	
b. Point Source	1505	73	9606	1040	257	133455	tons
2. Municipal	0	0	0	0	0	0	
B. Open Burning							
1. On Site							
a. Area Source	0	0	0	0	0	0	
b. Point Source	497	11	1149	99	82	54915	tons
2. Dumps							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
C. Wood Boiler	3887	419	299	297	1448	286695	tons
D. Total	5889	503	11054	1436	1787		
IV. TRANSPORTATION - AREA SOURCE							
A. Motor Vehicles							
1. Gasoline	1357	1017	259997	22608	12774	226084	10^3 gal
2. Diesel	177	319	2303	461	2410	14175	10^3 gal
B. Off Highway	0	0	0	0	0	0	
C. Air Craft	630	237	9813	4603	502		
D. Railroad	108	280	302	216	323	8625	10^3 gal

2. Dumps							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
C. Wood Boiler	3887	419	299	297	1448	286695	tons
D. Total	5889	503	11054	1436	1787		
IV. TRANSPORTATION - AREA SOURCE							
A. Motor Vehicles							
1. Gasoline	1357	1017	259997	22608	12774	226084	10^3 gal
2. Diesel	177	319	2303	461	2410	14175	10^3 gal
B. Off Highway	0	0	0	0	0	0	
C. Air Craft	630	237	9813	4603	502		
D. Railroad	108	280	302	216	323	8625	10^3 gal
E. Vessels	0	0	0	0	0	0	
F. Gasoline Handling	0	0	0	2261	0	226084	10^3 gal
G. Other	0	0	0	0	0	0	
H. Total	2272	1853	272415	30149	16009		
V. MISCELLANEOUS							
A. Agricultural Burning	0	0	0	0	0	0	
B. Cotton Ginning	667	0	0	0	0	74148	bales
C. Total	667	0	0	0	0		
VI. GRAND TOTAL							
A. Area Source	3281	2008	272717	30278	17251		
B. Point Source	39956	5996	26361	7964	9519		
C. Total	43237	8004	299078	38242	26770		

AQCR 106 Louisiana 1970

Source Category	Tons of Pollutant/Year					Fuel, Etc.	
	Part	SO_x	CO	HC	NO_x	Quantity	Units
I. FUEL COMBUSTION							
A. Residential Fuel Area S.							
1. Anthracite Coal	0	0	0	0	0	0	
2. Distillate Oil	0	0	0	0	0	0	
3. Natural Gas	646	20	680	272	2550	67989	10^6 scf
4. Wood	0	0	0	0	0	0	
5. Liquid Petroleum Gas	762	0	799	312	2498	249793	10^3 gal
6. Total	1408	20	1479	584	5048		
B. Comm.-Instl. & Ind. Fuel							
1. Bituminous Coal							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
2. Coke - Point Source	0	0	0	0	0	0	
3. Distillate Oil							
a. Area Source	328	838	4	66	1312	43728	10^3 gal
b. Point Source	17	23	0	3	67	2389	10^3 gal
4. Residual Oil							
a. Area Source	3	53	0	0	7	218	10^3 gal
b. Point Source	1	7	0	1	1	30	10^3 gal
5. Natural Gas							
a. Area Source	270	9	284	114	1065	28395	10^6 scf
b. Point Source	5678	191	125	12628	57241	704424	10^6 scf
6. Process Gas-Point S.	0	0	0	0	0	0	
7. Wood							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
8. Other							

b. Point Source	17	23	0	3	67	2389	10^3 gal
4. Residual Oil							
a. Area Source	3	53	0	0	7	218	10^3 gal
b. Point Source	1	7	0	1	1	30	10^3 gal
5. Natural Gas							
a. Area Source	270	9	284	114	1065	28395	10^6 scf
b. Point Source	5678	191	125	12628	57241	704424	10^6 scf
6. Process Gas-Point S.	0	0	0	0	0	0	
7. Wood							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
8. Other							
a. Area Source	0	0	0	0	0	0	
b. Gasoline- P.S.	866	167	1460	1510	15979		
9. Total	7163	1238	1873	14322	75672		
C. Steam-Electric Power Plants							
1. Anthracite Coal	0	0	0	0	0	0	
2. Bituminous Coal	0	0	0	0	0	0	
3. Distillate Oil	0	0	0	0	0	0	
4. Residual Oil	0	0	0	0	12	223	10^3 gal
5. Natural Gas	2335	92	63	6221	58668	311129	10^6 scf
6. Other							
7. Total	2335	92	63	6221	58680		
D. Total Fuel Combustion	10906	1400	3415	21127	139400		

EMISSIONS INVENTORY SUMMARY - AQCR 106 LOUISIANA 1970

Source Category	Tons of Pollutant/Year					Fuel, Etc.	
	Part	SO_2	CO	HC	NO_x	Quantity	Units
II. PROCESS LOSSES							
A. Area Source	0	0	0	0	0	0	
B. Point Source	619492	168939	1004571	373432	28773		
II. SOLID WASTE DISPOSAL							
A. Incineration							
1. On Site							
a. Area Source	0	0	0	0	0	0	
b. Point Source	1588	277	4347	653	469	228704	tons
2. Municipal	0	0	0	0	0	0	
B. Open Burning							
1. On Site							
a. Area Source	0	0	0	0	0	0	
b. Point Source	1369	86	1508	175	344	115557	tons
2. Dumps							
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
C. Wood Boiler	16612	2309	1445	1460	8376	1526558	tons
D. Total	19569	2672	7300	2288	9189		
IV. TRANSPORTATION - AREA SOURCE							
A. Motor Vehicles							
1. Gasoline	6349	4762	1216853	105813	59785	1058133	10^3 gal
2. Diesel	829	1493	10781	2156	11279	66345	10^3 gal
B. Off Highway							
C. Air Craft	1217	532	31086	6330	561		
D. Railroad	319	831	894	639	958	25556	10^3 gal
E. Vessels	4809	55405	12505	9619	14044	384759	10^3 gal

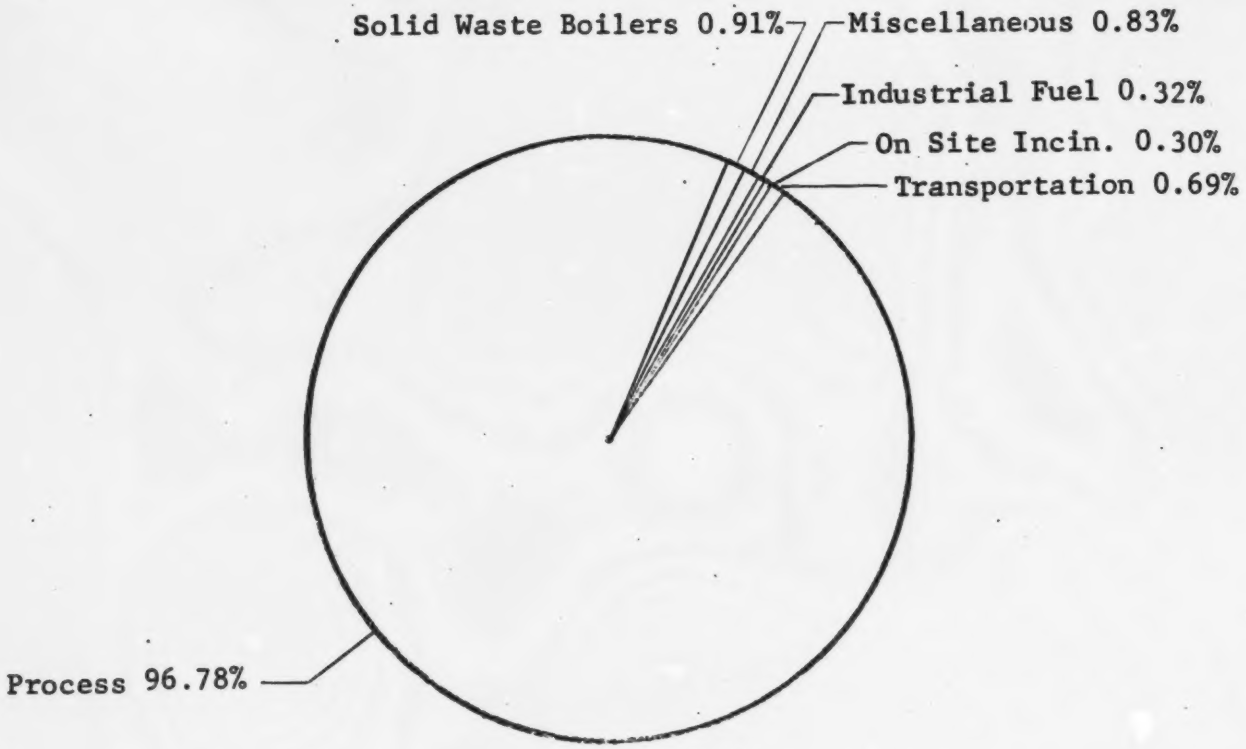
a. Area Source	0	0	0	0	0	0	
b. Point Source	0	0	0	0	0	0	
C. Wood Boiler	16612	2309	1445	1460	8376	1526558	tons
D. Total	19569	2672	7300	2288	9189		
IV. TRANSPORTATION - AREA SOURCE							
A. Motor Vehicles							
1. Gasoline	6349	4762	1216853	105813	59785	1058133	10^3gal
2. Diesel	829	1493	10781	2156	11279	66345	10^3gal
B. Off Highway							
C. Air Craft	1217	532	31086	6330	561		
D. Railroad	319	831	894	639	958	25556	10^3 gal
E. Vessels	4809	55405	12505	9619	14044	384759	10^3 gal
F. Gasoline Handling	0	0	0	10581	0	1058133	10^3 gal
G. Other	0	0	0	0	0	0	
H. Total	13523	63023	1272119	135138	86627		
V. MISCELLANEOUS							
A. Agricultural Burning	32622	0	217482	43496	4350	289976	acres
B. Cotton Ginning	669	0	0	0	0	74342	bales
C. Total	33291	.0	217482	43496	4350		
VI. GRAND TOTAL							
A. Area Source	48823	63943	1491368	179398	98404		
B. Point Source	647958	172091	1013519	396083	169930		
C. Total	696781	236034	2504887	575481	268339		

APPENDIX III

PIE CHARTS SUMMARIZING THE EMISSIONS INVENTORY

REGION 19

SUMMARY OF PARTICULATE EMISSIONS

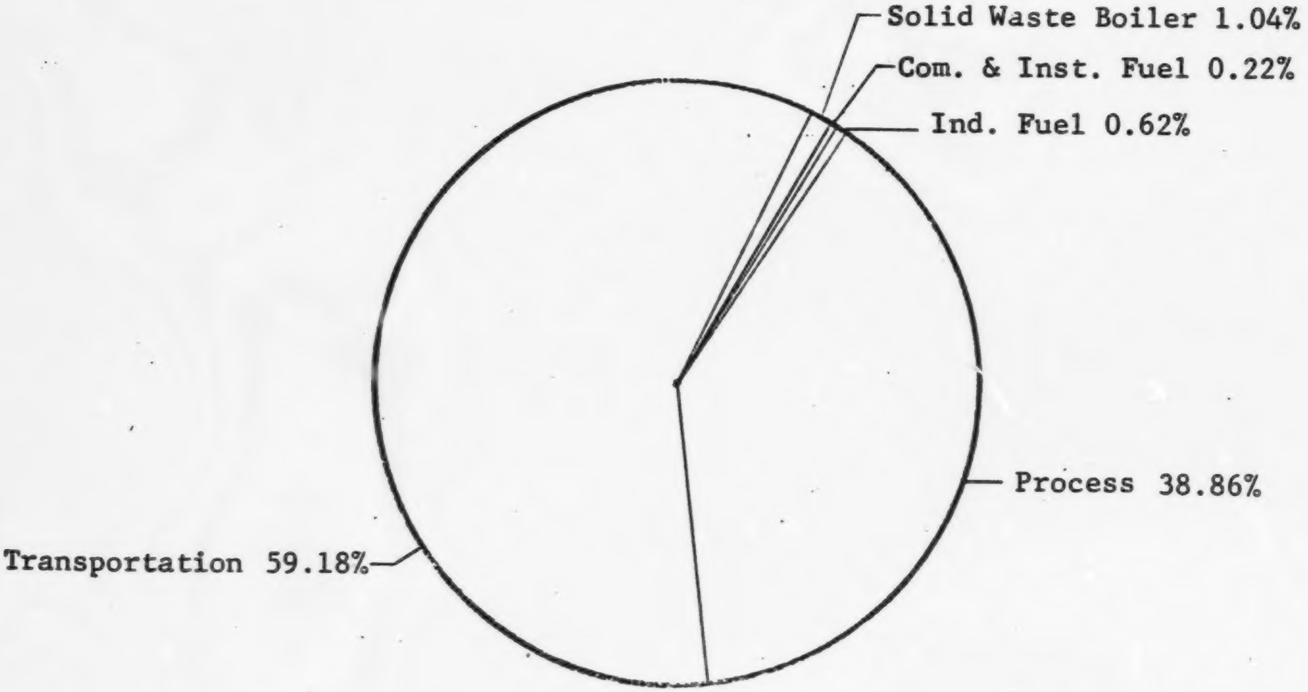


Omitted emission sources

Power plants	0.04%
Residential fuel	0.07%
Com. and Inst. Fuel	0.01%
Municipal Incin.	0.00%
Open Burning	0.05%

REGION 19

SUMMARY OF SULFUR OXIDE EMISSIONS

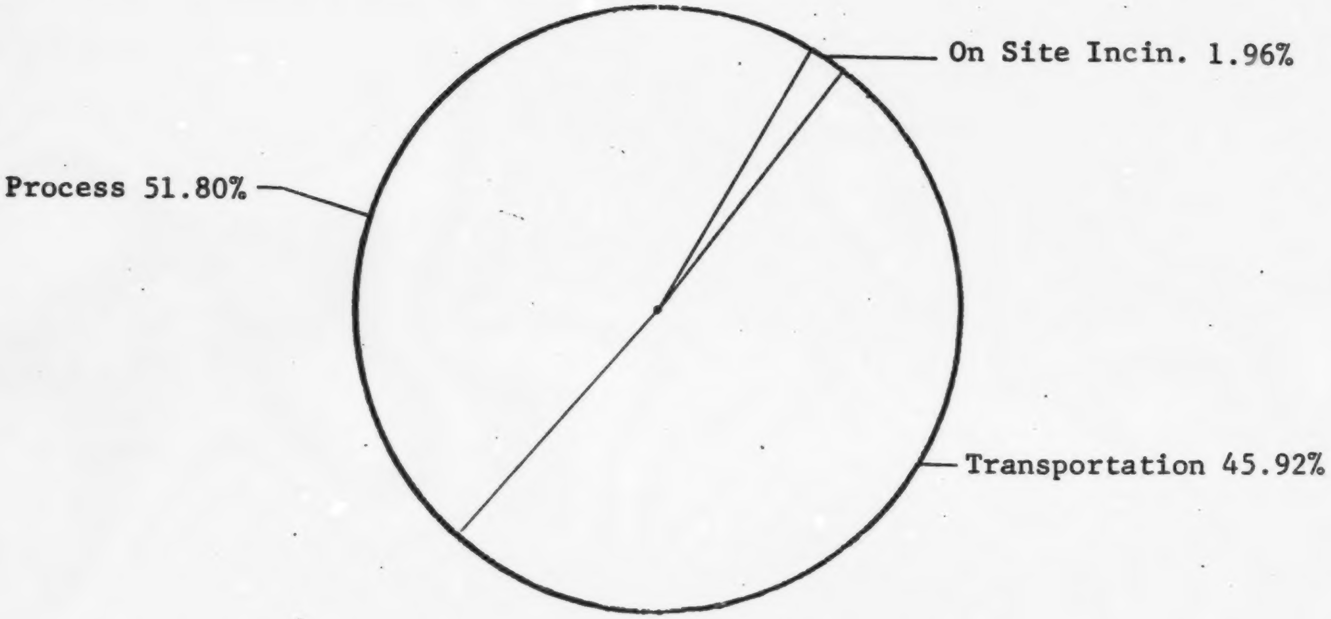


Omitted emission sources:

Power plants	0.02%
Residential Fuels	0.01%
Municipal Incin.	0.00%
On Site Incin.	0.04%
Open Burning	0.00%
Miscellaneous	0.00%

REGION 19

SUMMARY OF CARBON MONOXIDE EMISSIONS

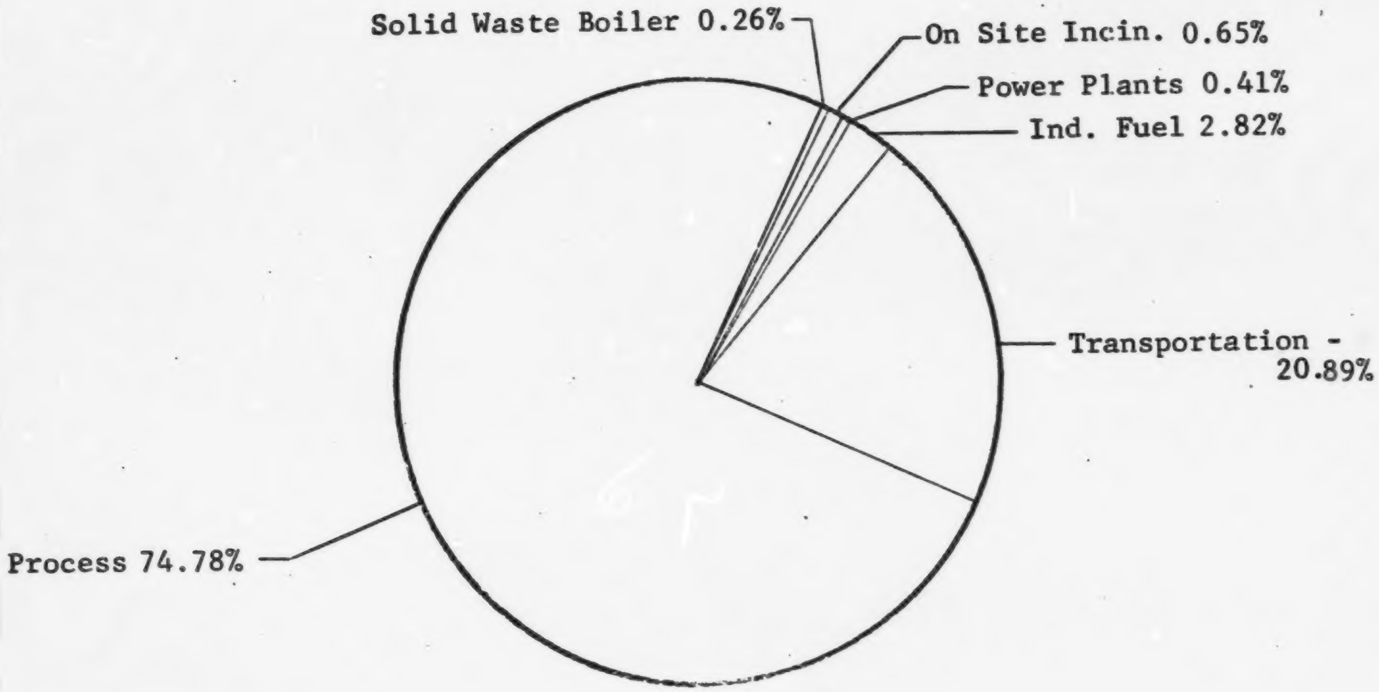


Omitted emission sources:

Power plants	0.00%
Residential Fuel	0.06%
Com. & Inst. Fuel	0.00%
Industrial Fuel	0.01%
Municipal Incineration	0.00%
Open Burning	0.14%
Solid Waste Boiler	0.07%
Miscellaneous	0.00%

REGION 19

SUMMARY OF HYDROCARBON EMISSIONS

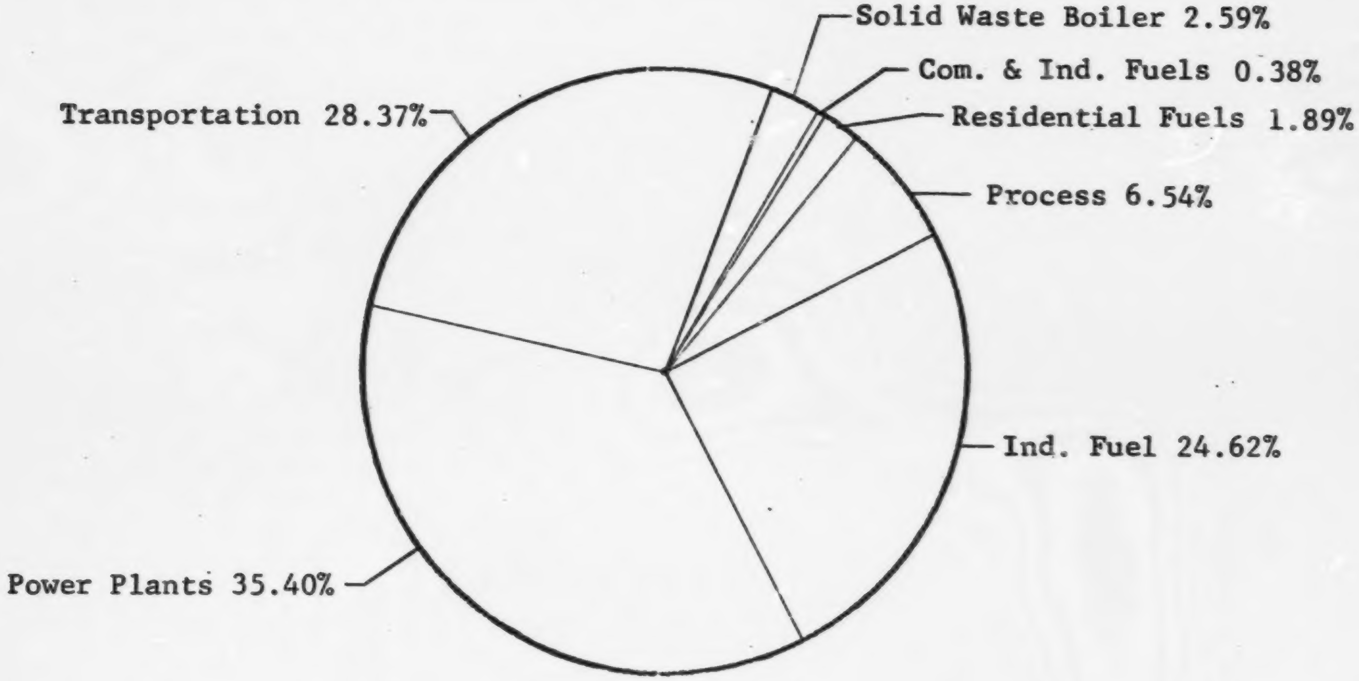


Omitted Emission Sources

Residential Fuel	0.11%
Com. & Inst. Fuel	0.01%
Municipal Incin.	0.00%
Open Burning	0.04%
Miscellaneous	0.00%

REGION 19

SUMMARY OF NITROGEN OXIDE EMISSIONS

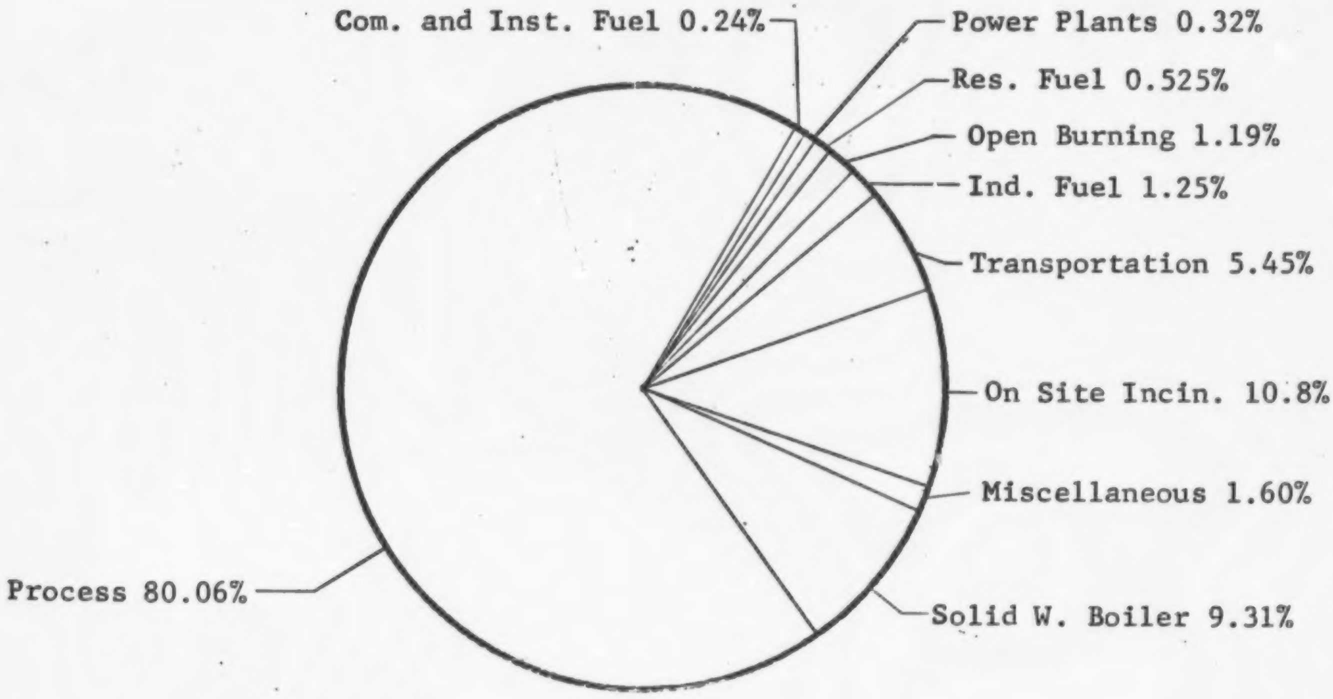


Omitted Emission Sources:

Municipal Incineration	0.00%
On Site Incineration	0.17%
Open Burning	0.04%
Miscellaneous	0.00%

REGION 22

SUMMARY OF PARTICULATE EMISSIONS

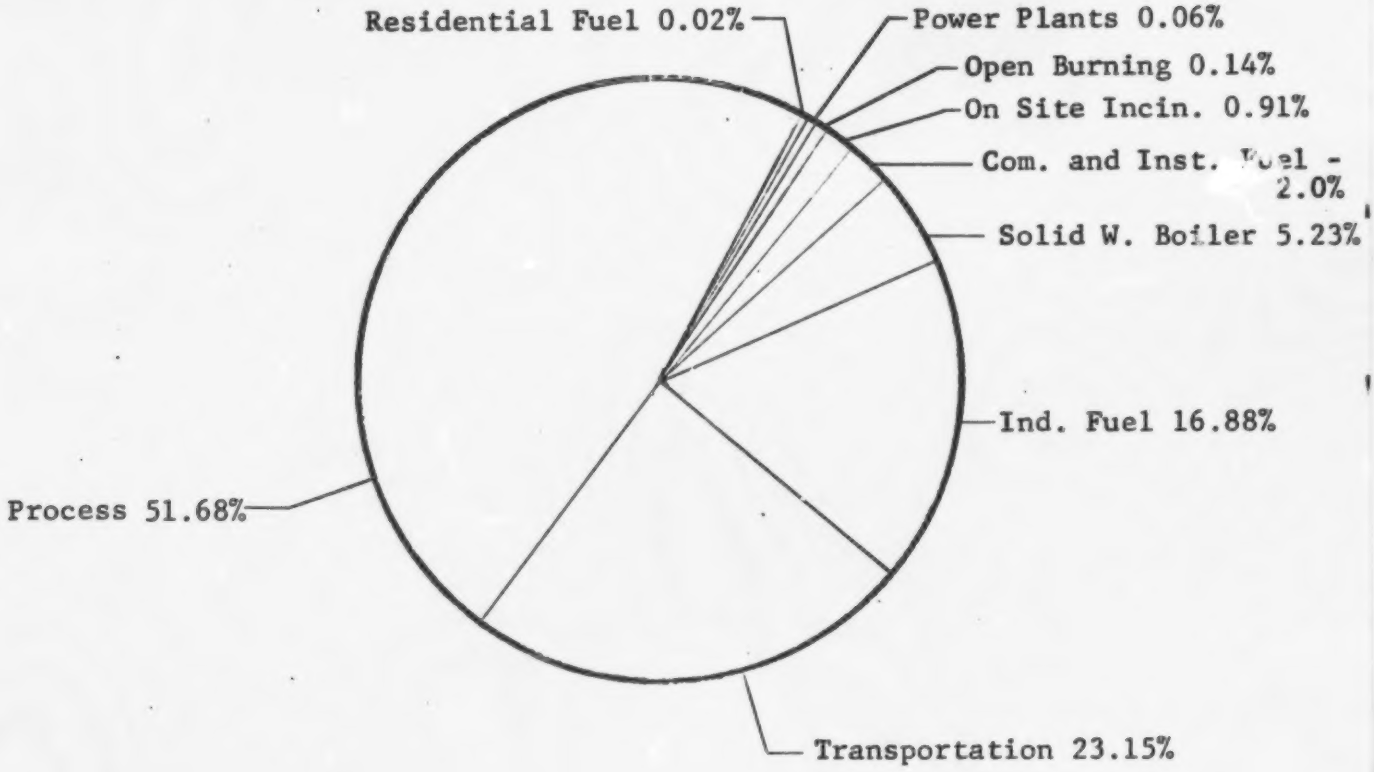


Omitted emission sources:

Municipal Incineration 0.0%

REGION 22

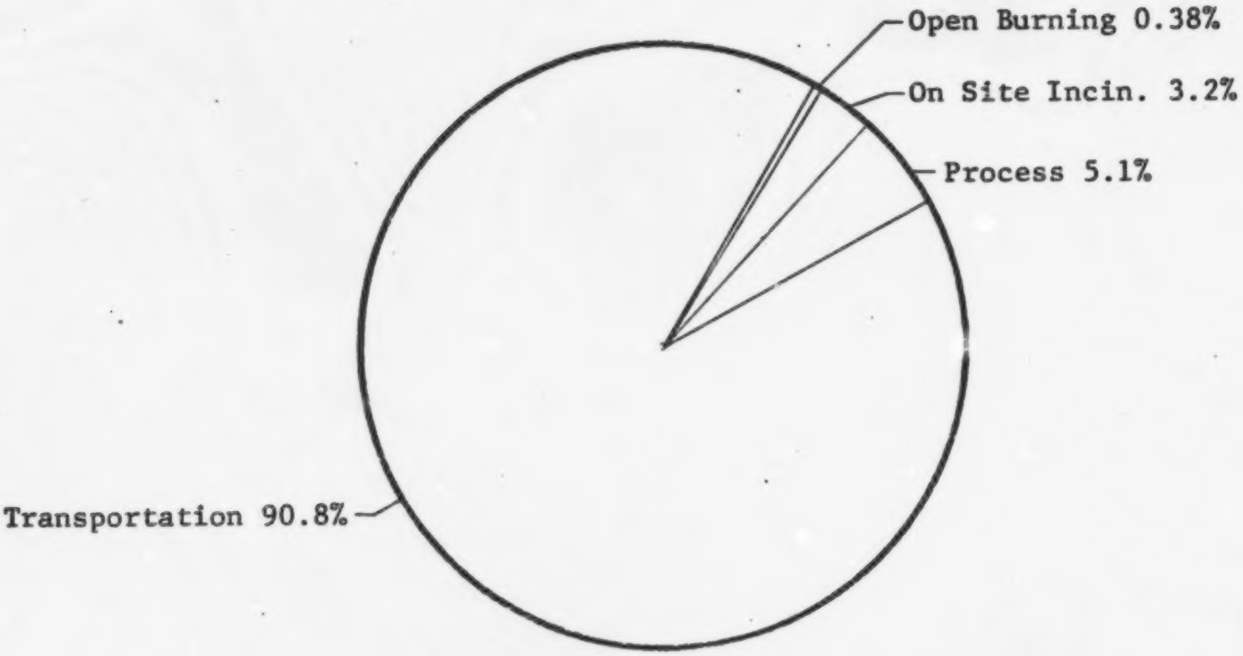
SUMMARY OF SULFUR OXIDE EMISSIONS



Omitted emission sources:	
Municipal Incineration	0.0%
Miscellaneous	0.0%

REGION 22

SUMMARY OF CARBON MONOXIDE EMISSIONS

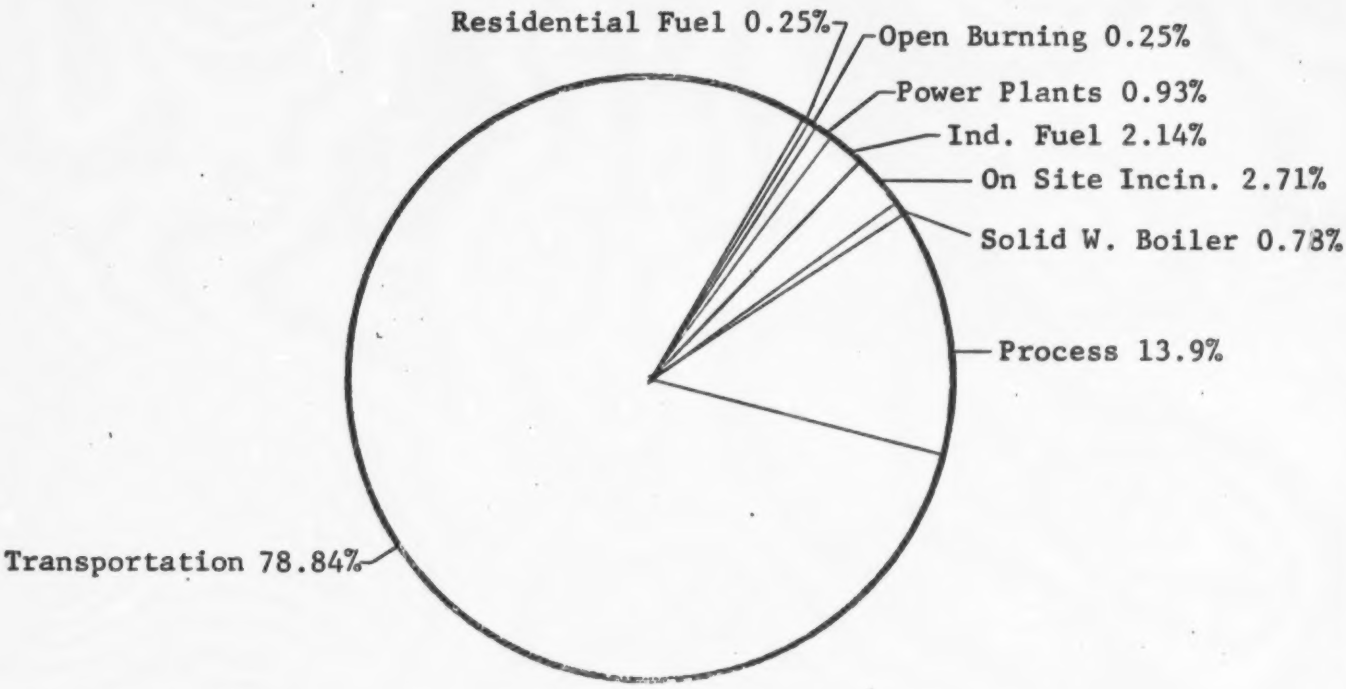


Omitted emission sources:

Municipal Incineration	0.00%
Power Plants	≈ 0.00%
Ind. Fuel	≈ 0.00%
Com. and Inst. Fuel	0.01%
Residential Fuel	0.08%
Miscellaneous	0.00%
Solid Waste Incineration	0.10%

REGION 22

SUMMARY OF HYDROCARBON EMISSIONS

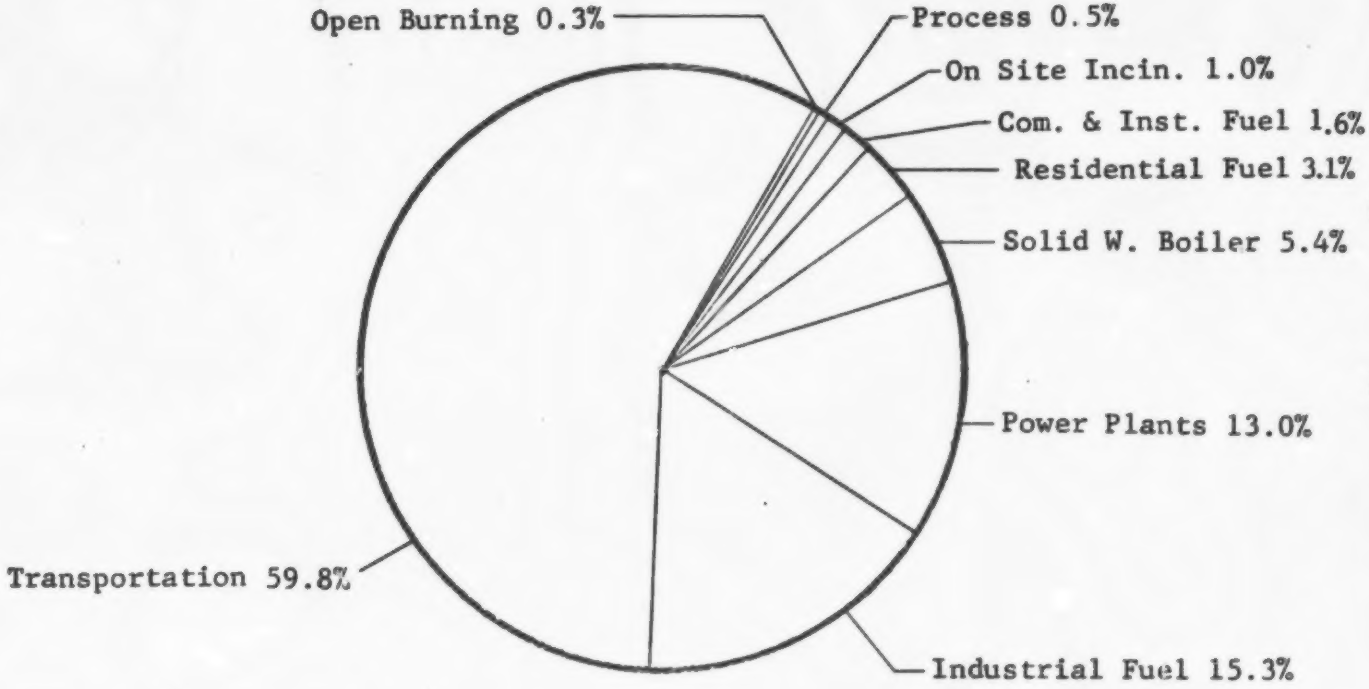


Omitted emission sources:

Com. and Inst. Fuel	0.07%
Municipal Incineration	0.0%
Miscellaneous	0.0%

REGION 22

SUMMARY OF NITROGEN OXIDE EMISSIONS

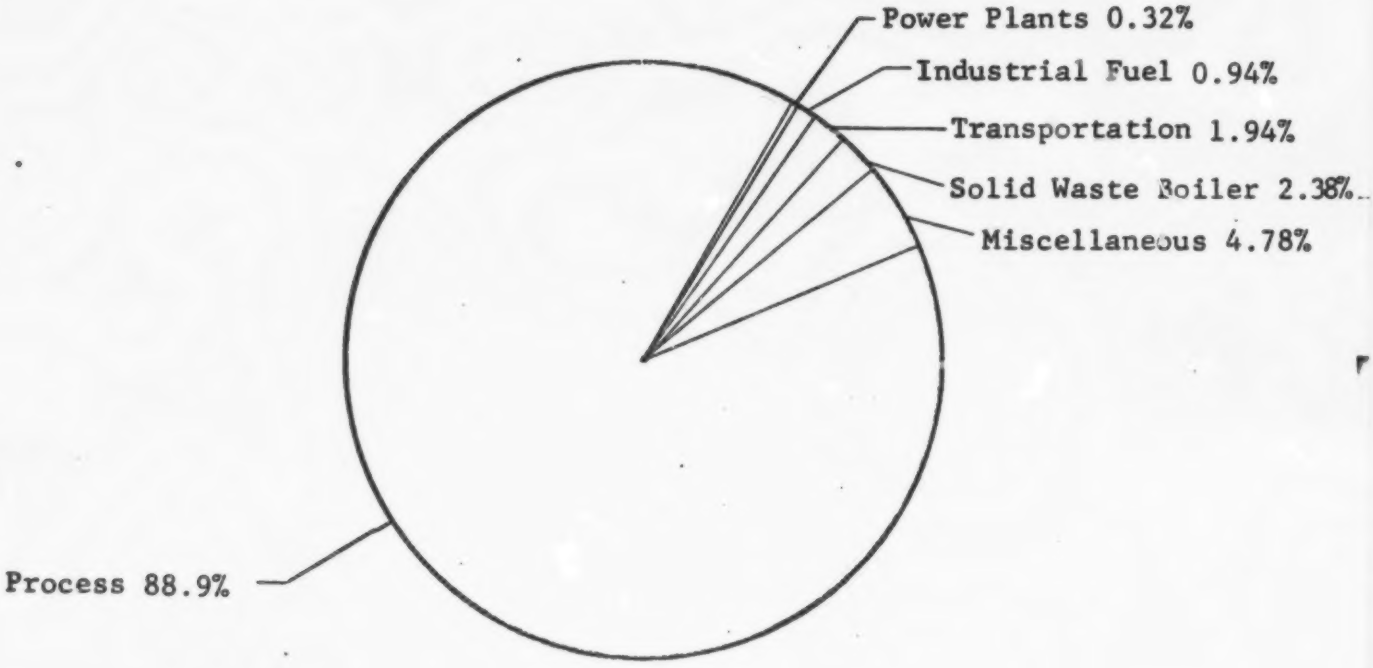


Omitted emission sources:

Municipal Incineration	0.0%
Miscellaneous	0.0%

REGION 106

SUMMARY OF PARTICULATE EMISSIONS

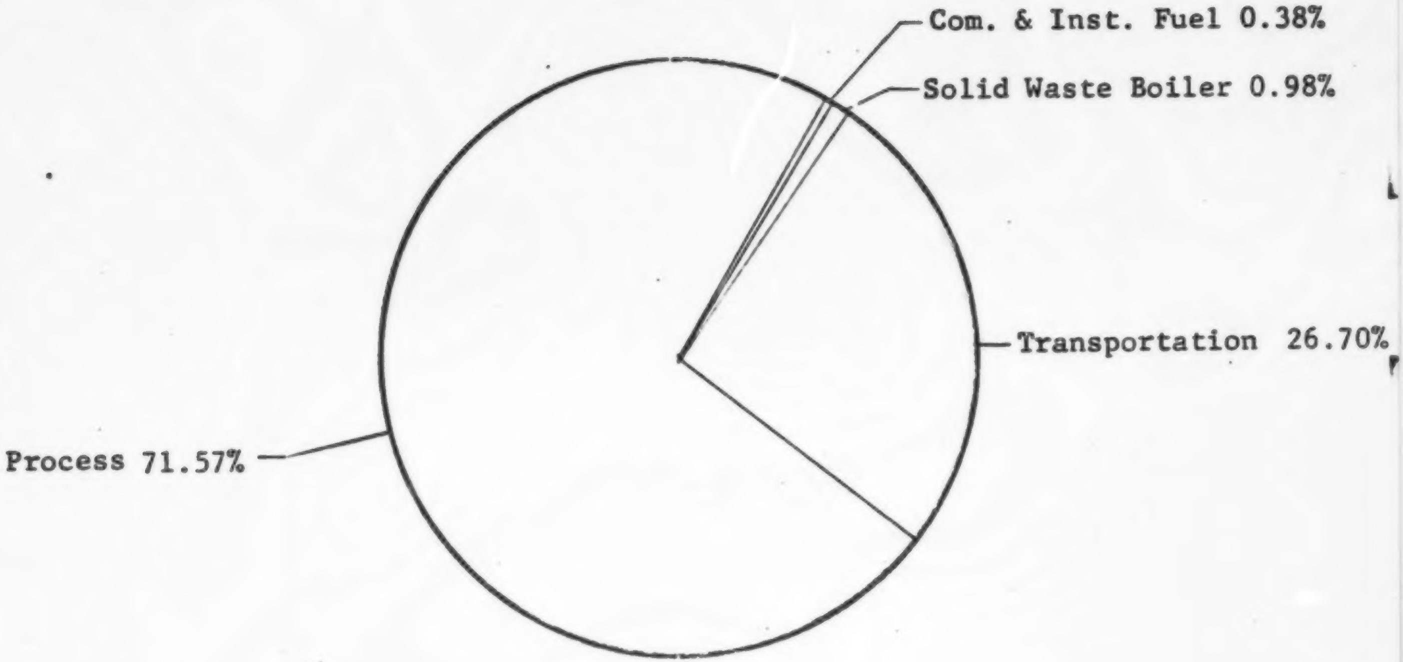


Omitted emission sources:

Residential fuel	0.20%
Com. and Inst. Fuel	0.08%
Municipal Incin.	0.00%
On Site Incin.	0.23%
Open Burning	0.19%

REGION 106

SUMMARY OF SULFUR OXIDE EMISSIONS

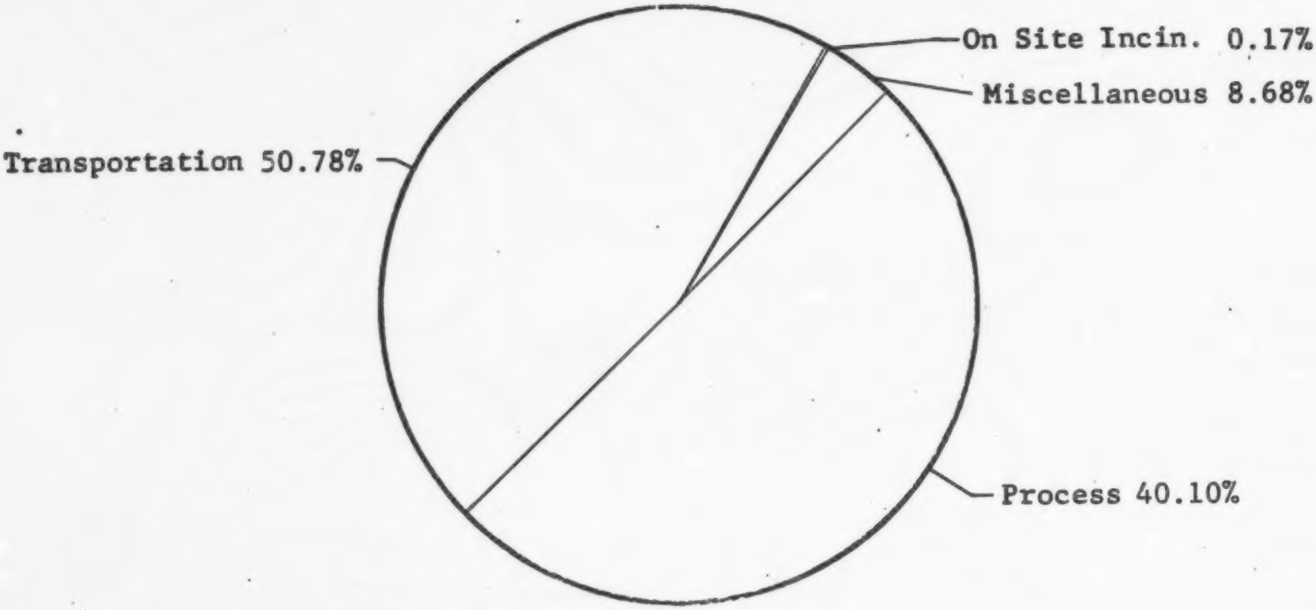


Omitted emission sources:

Power plants	0.04%
Residential fuel	0.01%
Industrial fuel	0.16%
Municipal Incin.	0.00%
On Site Incin.	0.12%
Open burning	0.04%
Miscellaneous	0.00%

REGION 106

SUMMARY OF CARBON MONOXIDE EMISSIONS

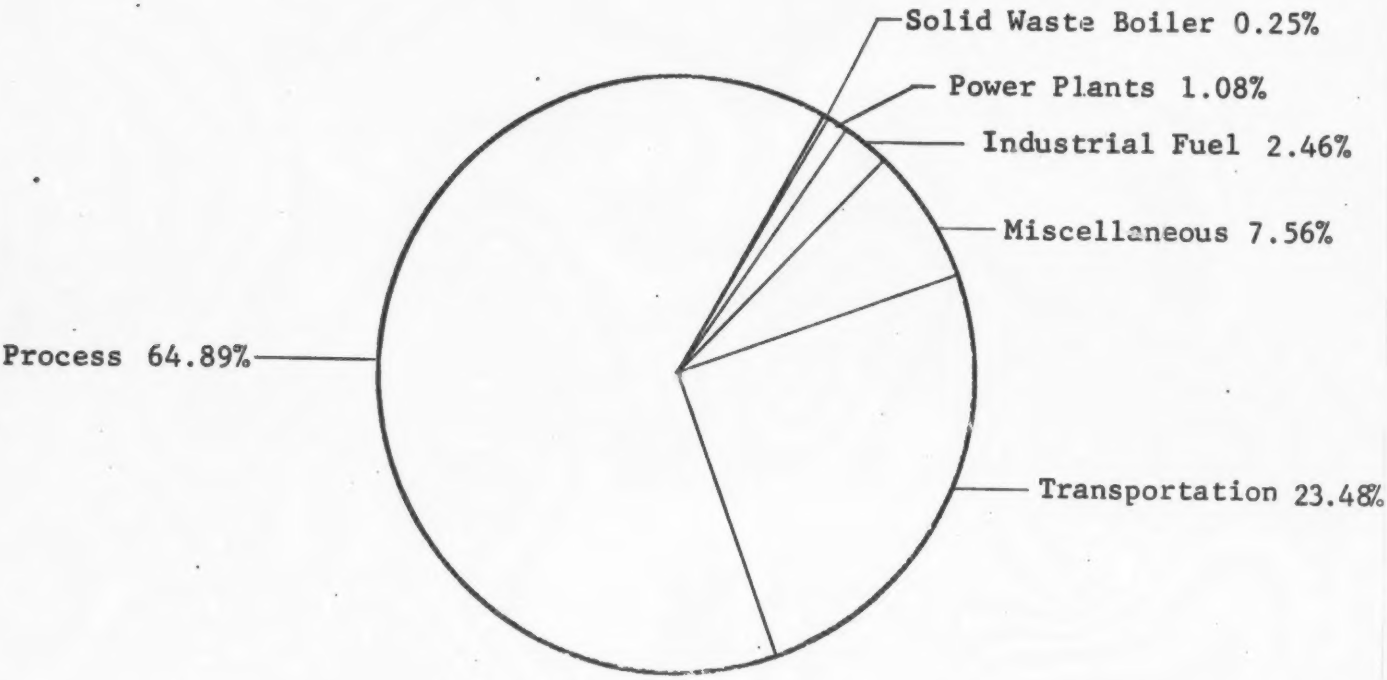


Omitted emission sources

Residential Fuel	0.06%
Com. and Inst. Fuel	0.01%
Industrial Fuel	0.07%
Open Burning	0.06%
Municipal Incineration	0.00%
Power Plants	0.00%
Solid Waste Boilers	0.06%

REGION 106

SUMMARY OF HYDROCARBON EMISSIONS

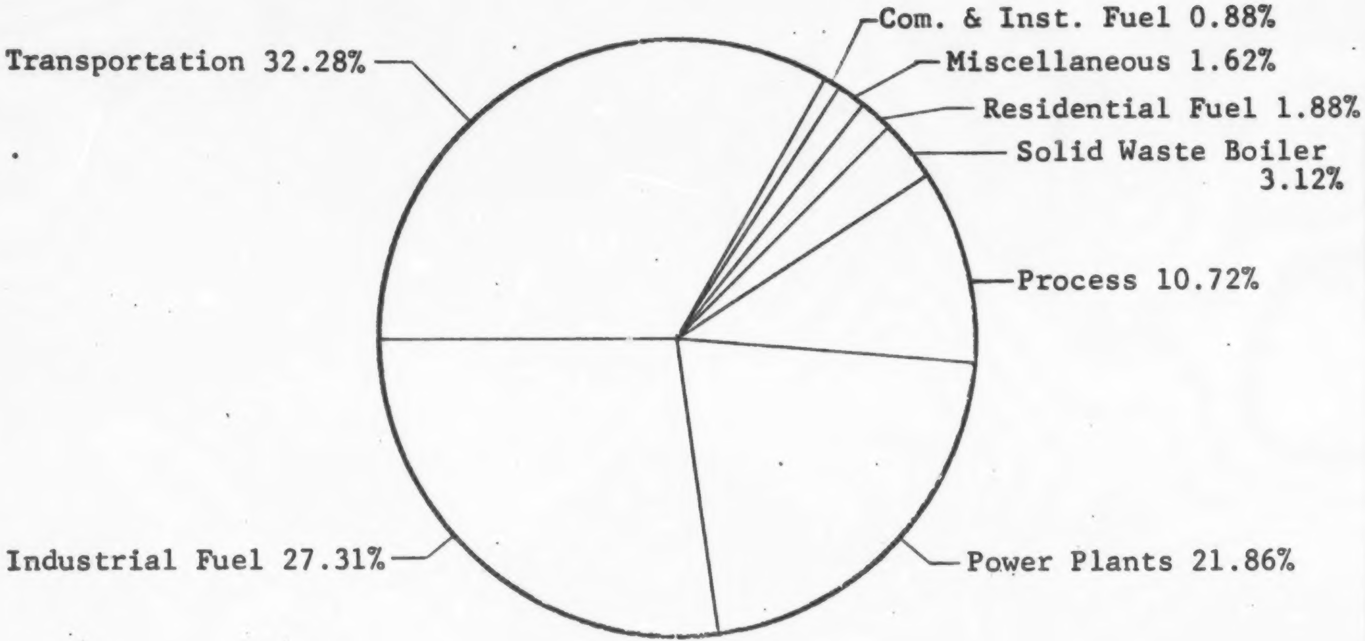


Omitted Emission Sources

Residential Fuel	0.11%
Com. & Inst. Fuel	0.03%
Municipal Incin.	0.00%
On Site Incin.	0.12%
Open Burning	0.03%

REGION 106

SUMMARY OF NITROGEN OXIDE EMISSIONS



Omitted emission sources:

On Site Incineration	0.17%
Municipal Incineration	0.00%
Open Burning	0.13%

APPENDIX IV

STATUS BOOK SUMMARY

LOUISIANA AIR CONTROL COMMISSION

REPLIES RECEIVED	NUMBER
APCO-PENDING----	63
APCO-COMPLETE---	485
OUT OF BUSINESS-	32
NEGLIGIBLE------	305
RECON BY PHONE--	19
RECON BY LETTER-	103

	NUMBER	PERCENT
QUESTIONNAIRES MAILED	1,215	
QUESTIONNAIRES RETURNED BUT INCOMPLETE	63	5.1
QUESTIONNAIRES RETURNED COMPLETE	822	67.6
QUESTIONNAIRES NOT RETURNED TO DATE	330	27.1

APPENDIX V

SAMPLE LACC EMISSIONS INVENTORY FORM

ANDREW HEDMEG, M.D., M.P.H., CHAIRMAN
WM. T. HACKETT, VICE CHAIRMAN
CHARLES J. PASQUA
H. F. M. GARRETT, M.D.

DAVE L. PEARCE
EVERETT JACOB
JOHN E. TRYGG, TECHNICAL SECRE

LOUISIANA AIR CONTROL COMMISSION

Louisiana State Office Building
P.O. Box 60630
NEW ORLEANS 70160

Dear Sir:

It is requested that you complete the enclosed form and return it to our office at your earliest convenience. We would like to recieve a reply within thirty days of your receipt of this letter.

The Louisiana Air Control Commission, created by Act 259 of the 1964 Legislature, has been charged with maintaining the purity of the air of our State. The Commission has been given certain specific duties including the collection and dissemination of information on air control.

The information collected will be held strictly confidential according to Commission policy. The Commission plans to continue this policy unless prevented from doing so by State or Federal legislation or legal action. In general, this information will be used developing the implementation plan for achieving and maintaining pure air for Louisiana.

I realize that some questions may be difficult to answer. Give us the best information you can and if a question is not applicable, mark N.A.

If there are questions, either call or write us. Your cooperation is appreciated.

Very truly yours,

John E Trygg

John E. Trygg
Technical Secretary

Enclosure

LOUISIANA STATE AIR CONTROL COMMISSION
LOUISIANA STATE OFFICE BUILDING
P. O. Box 60630
New Orleans, La. 70160

EMISSION INVENTORY QUESTIONNAIRE

Page 1 of 6

To: ____________________________________

____
(P. O. Box No.) (Street Address)

____
(City or Town) (Parish) (Zip)

PLEASE CORRECT IF NAME OR ADDRESS IS INCORRECT

AUTHORITY: In accordance with the provisions of R.S. 40:2201 et. seq., The Louisiana Air Control Commission has directed the Technical Secretary to make a survey of Air Pollution in Louisiana and to report the results to the Commission.

INSTRUCTION: (Please Read Carefully)

1. File a separate report for each of your establishments physically located in Louisiana.
2. Use accurate estimates when records are not available.
3. Principal means the major portion of use half or more.

4a. Answer All Questions. If certain question are not applicable to your activity, pleas indicate NONE or NOT APPLICABLE.

b. Attach descriptions in cases where questio is not applicable.

5. IF OTHER is marked, specify in all cases; use additional sheets if necessary.
6. The policy of The Commission has been to keep all information received in this questionnaire CONFIDENTIAL. The Commissio plans to continue this policy unless prevented to do so by State or Federal legislation or legal action.

Item 1

Activities

A. Days per week normally in operation (check all that apply):

1. ☐ Monday 2. ☐ Tuesday 3. ☐ Wednesday 4. ☐ Thursday 5. ☐ Friday
6. ☐ Saturday 7. ☐ Sunday

B. Days per year normally in operation:

__ __ __ Days

C. Peak production season:

1. ☐ Year round 2. ☐ Summer 3. ☐ Fall 4. ☐ Winter 5. ☐ Spring

D. Shifts normally operated:

1. ☐ Evening (4pm-12pm, 3pm-11pm, etc.) 2. ☐ Day (8am-4pm, 7am-3pm, etc.)
3. ☐ Night (12pm-8am, 11pm-7am, etc.)

E. Total number of employees at this establishment: (check range)

1. ☐ Less than 5 2. ☐ 5-49 3. ☐ 50-99 4. ☐ 100-249
5. ☐ 250-449 6. ☐ 450-749 7. ☐ 750-999 8. ☐ over 1,000

F. Type of Operation (Include brief summary of operations under ITEM 7, REMARKS)

1. ☐ Chemical 4. ☐ Mining 7. ☐ Manufacturing 10. ☐ Lumber & allied products
2. ☐ Petroleum 5. ☐ Foundry 8. ☐ Disposal 11. ☐ Metals & allied products
3. ☐ Food, etc. 6. ☐ Machine 9. ☐ Paper & allied products 12. ☐ Other (Name) __________

Item I (Cont'd)

G. Raw Materials Used (Chemical name if possible or apllicable)

Materials	Amount per year	Units	Form (liquid, gas or solid)	How stored	How transferre or shipped

H. Intermediate Products (Chemical name if possible or applicable)

Materials	Amount per year	Units	Form (liquid, gas or solid)	How stored	How transferre or shipped

I. Principal Finished Products (Chemical names if possible or applicable)

Materials	Amount per year	Units	Form (liquid, gas or solid)	How stored	How transferre or shipped

J. Ownership:

1. ☐ Private 2. ☐ Municipal 3. ☐ State 4. ☐ Federal

5. ☐ Corporation 6. ☐ Partnership 7. ☐ Other ____________________

Item 2

FUEL CONSUMPTION

Report Quantities of fuels consumed last year

COMPLETE THE FOLLOWING TABLE WITH LAST YEAR'S INFORMATION

	FUEL	QUANTITY	UNITS	QUALITY
A.	Coal used for heat & power		Short tons	% sulfur by weight
	Coal used for production			
B.	Light Distillate fuel oil. Nos. 1-4 (Heat & Power)		Gallons	% sulfur by weight
	Light distillate fuel oils. Nos. 1-4 (Production)			

STATE OF LOUISIANA
AIR CONTROL COMMISSION

EMISSION INVENTORY QUESTIONNAIRE

Item 2 (Cont'd) PLEASE NOTE UNITS OF MEASURE TO BE USED		FUEL	QUANTITY	UNITS	QUALITY
	C.	Residual or Heavy oils Nos. 5-6 (Heat & Power)		Gallons	% sulfur by weight PPM Metals
		Residual or Heavy oils. Nos. 5-6 (Production)			
	D.	Gas-natural, manufactured or mixed (Heat & Power)		Cubic Feet	% sulfur by weight
		Gas-natural, manufactured or mixed (Production)			
	E.	Others - Specify kind and use 1. 2.			

Item 3

REFUSE COLLECTION AND DISPOSAL

A. Amount of combustible refuse disposed of per year: 1. ☐ None

_____tons or volume (No.___& capacity_______________ of waste containers)

B. Form or type of refuse; (wood, rubber, paper, etc.)

C. Principal methods of refuse collection: 1. ☐ Not Applicable

2. ☐ City pickup 3. ☐ Private pickup 4. ☐ Disposal on premises

5. ☐ Other (Specify)_____________

D. If private pickup, name of contractor and address:

E. Principal Methods of Refuse Disposal: 1. ☐ Not Applicable

2. ☐ Sanitary Landfill 3. ☐ Open Dump 4. ☐ Incineration

5. ☐ Composting 6. ☐ Open Burning 7. ☐ Other_____________

F. Method of Incineration:

1. ☐ N/A 2. ☐ Single Chamber Incinerator 3. ☐ Gas Fired Incinerator

4. ☐ Multiple Chamber Incinerator 5. ☐ Boiler 6. ☐ Other_____________

G. Incinerator used:

☐ N/A

Manufacturer:____
Model:____
Years in operation:_______________ Pollution Abatement Facilities___________
Incinerator Capacity: Pounds per hour_______________
Hours of operation per week_________

STATE OF LOUISIANA
AIR CONTROL COMMISSION

EMISSION INVENTORY QUESTIONNAIRE

Item 4	A. Particulate Matter and Aerosols (exclude products of combustion	Approximate		None	Particle size Distribution (micron range)	Present but Unable to Estimate
		#/HR	Tons/Yr			
EMISSIONS	1. Carbonaceous			☐		☐
	2. Mineral Solids			☐		☐
	3. Organic Particles			☐		☐
	4. Other			☐		☐
	5.			☐		☐
	6.			☐		☐

B. Organic Gases or Vapors (exclude products of combustion)	Approximate (on stream)			None
	lbs/hr	ft^3/hr	Tons/hr	
1. Hydrocarbons (specify)				
a)				☐
b)				☐
c)				☐
2. Halogenated (specify)				
a)				☐
b)				☐
c)				☐
3. Oxygenated (specify)				
a)				☐
b)				☐
c)				☐
4. Other (specify)				☐

C. Inorganic Gases (include products of combustion (indicate if calculated from fuel)	Approximate		None	Present but Unable to Estimate
	#/HR	Tons/Yr		
1. Sulfur Dioxide (SO_2)			☐	☐
2. Hydrogen Sulfide (H_2S)			☐	☐
3. Halogens (specify)				
a)			☐	☐
b)			☐	☐
c)			☐	☐
4. Other (specify)				

STATE OF LOUISIANA
AIR CONTROL COMMISSION

EMISSION INVENTORY QUESTIONNAIRE

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Item 5

STACK INFORMATION

USE ADDITIONAL SHEETS IF NECESSARY

A. NAME or Description of Sources	Identification Number	EMISSION				STACK		
		Conc. PPM	Rate (cfs)	Temp. F	Exit Felocity Ft./Sec.	Diam. Feet	Elev. Above Grade	Can be Samples Yes or No

B. Stack Use: (indicate stack number from above)

1. ☐ Not Applicable 2. ______________ Process Emissions

3. __________________ Fuel Combustion Product 4. _______________ Combined

Item 6

AIR POLLUTION CONTROL INFORMATION

A. Air Pollution Control Units in use: (indicate efficiency)

1. ☐ None
2. ☐ Settling Chamber
3. ☐ Baffles
4. ☐ Electrostatic Precipitator
5. ☐ Multiple Cyclones
6. ☐ Cloth Filters
7. ☐ Adsorption
8. ☐ Vapor Recovery System
9. ☐ Direct Fired Afterburner
10. ☐ Other Powered Inertial Separator
11. ☐ Catalytic Afterburner
12. ☐ Demister
13. ☐ Scrubber
14. ☐ Cyclone
15. ☐ Type Emission Monitor or Control System ______________
16. ☐ Other ____________________________

B. Do you have an established program of preventive or operational maintenance on your Air Pollution Control Equipment?

1. ☐ N/A 2. ☐ Yes 3. ☐ No 4. If Yes, Describe on separate sheet.

STATE OF LOUISIANA
AIR CONTROL COMMISSION

EMISSION INVENTORY QUESTIONNAIRE

Page 6 of 6

Item 6 (cont'd)

C. Approximately how much money have you spent on Air Pollution Control Equipment and operation in the past 10 years or in the _____ Years the plant has been in operation?

☐ None

Equipment $ ____________________

Operation$ ____________________

Combined $ ____________________

D. On a separate sheet list air pollution abatement measures which are or otherwise incomplete. What is the projected reduction in emissions after completion (tons/year reduction)? (Include type and level of emissions for specific years.)

Item 7

REMARKS

Please supply a simplified flow diagram or block diagram of plant or plants on a separate sheet. Type or print pertinent information. Include brief summary of process or operations.

Item 8

PER-SONNEL

List plant personnel responsible for Air Control.
(To be contacted for visits and communication)

A. Name:
Title
Telephone No.

B. Name:
Title
Telephone No.

C. Name:
Title
Telephone No.

Name of responsible member of operation
Date

Title of responsible member listed above and address and telephone No.

Print or Type name of person preparing report.

Title of above person
Telephone No.
Area Code

APPENDIX VI

MAPS

a) New Orleans

b) Baton Rouge

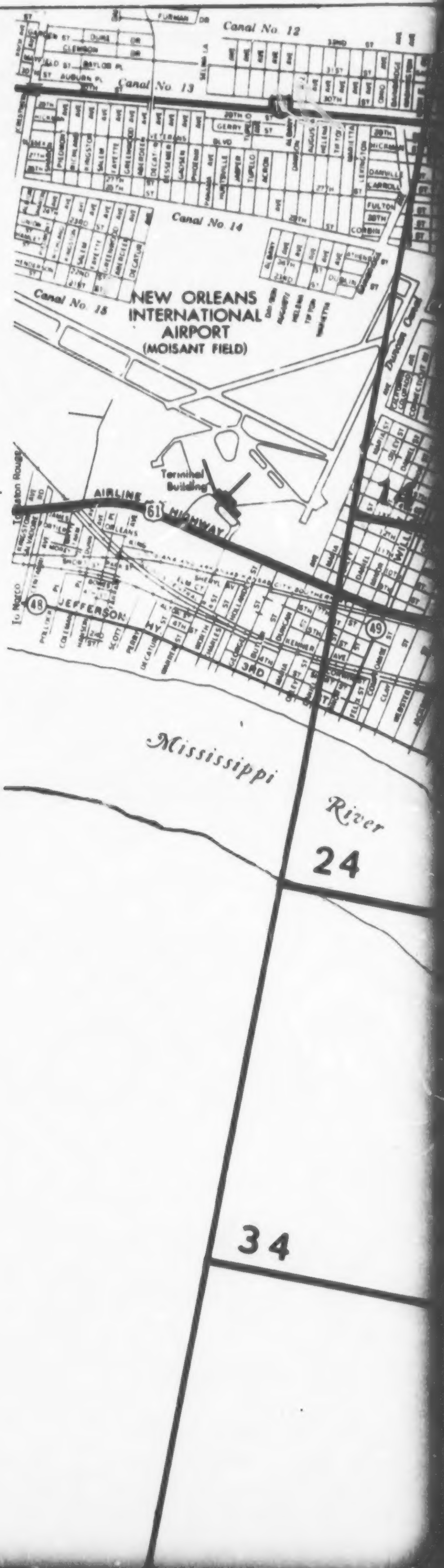
c) Lake Charles

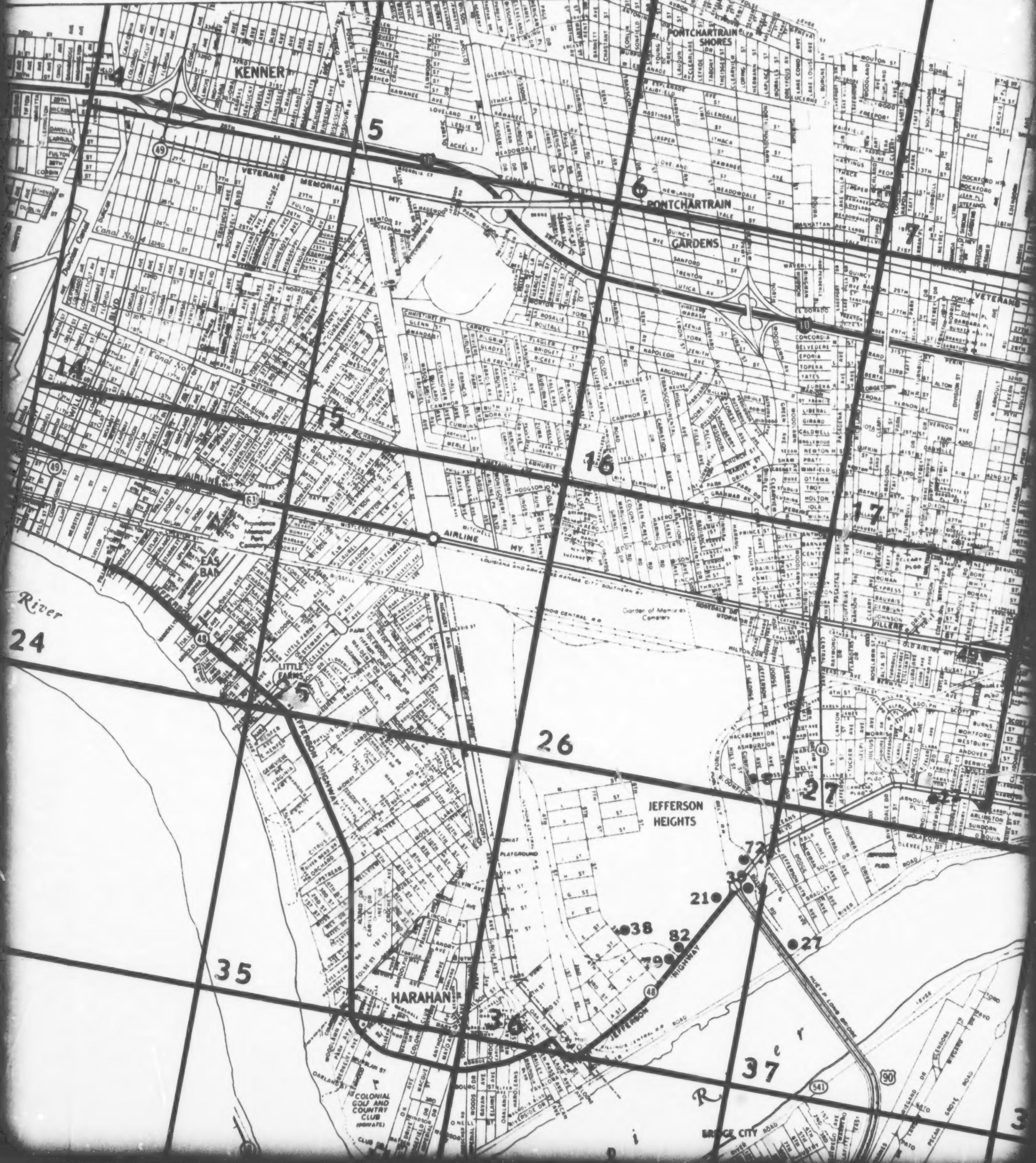
d) Louisiana - UTM Grids

e) Louisiana - Political Jurisdictions and AQCR

New Orleans
SCALE OF MILES
0
1/4
1/2
3/4
1
1 1/4
ONE INCH EQUALS APPROXIMATELY SIX TENTHS MILES
Controlled Access Highways
(Entrance & Exit only at Interchanges)
HIGHWAY NUMBERS
10 Interstate
90 U.S.
48 State
Great River Road
1971 Edition

NUMBER	COMPANY NAME
1	Allied Chem. Corp.
2	American Can Co.
3	American Coffee Co.
4	American Cyanimid Co.
5	American Metal, Inc.
6	American Standard, Inc.
7	AMF Tuboscope, Inc.
8	Architectural Stone Co., Inc.
9	Arnaud Coffee Corp.
10	Avondale Shipyards, Inc., Industrial Division
11	Avondale Shipyards, Inc., Service Foundry Division
12	Avondale Shipyards, Inc., Standard Paint & Varnish Div.
13	Avondale Shipyards Inc., Westwego Yard
14	Baroid Division National Lead Co.
15	Beldon Concrete Products, Inc.
16	Bernis Co., Inc.
17	Bernard Lumber Co., Inc.
18	Blue Plate Foods, Inc.
19	Celotex Corp.
20	Chase Bag Co.
21	Continental Can Co., Corrugated Containers Plant
22	Continental Can Co., Inc.
23	Continental Can Co., Inc.
24	Continental Can Co., Inc.
25	Continental Can Co., Inc.
26	Delta Petroleum Co., Inc.
27	Delta Steel Form & Fabricating Co., Inc.
28	Dickey Foods
29	Dixie Brewing Company, Inc.
30	Dixie Plastics Mfg. Co.
31	Dr. G. H. Tichenor Antiseptic Co., Inc.
32	Dresser Minerals,


Canal No. 12
Canal No. 13
Canal No. 14
Canal No. 15
NEW ORLEANS INTERNATIONAL AIRPORT
(MOISANT FIELD)
Terminal Building
AIRLINE HIGHWAY
61
JEFFERSON HWY
48
49
14
Mississippi River
24
34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37
KENNER
PONTCHARTRAIN SHORES
PONTCHARTRAIN GARDENS
VETERANS MEMORIAL
VETERANS
AIRLINE HY.
Providence Memorial Park Cemetery
EAST BANK
River
LITTLE FARMS
Garden of Memories Cemetery
JEFFERSON HEIGHTS
JEFFERSON HIGHWAY
HARAHAN
COLONIAL GOLF AND COUNTRY CLUB (PRIVATE)
BRIDGE CITY
Canal No. 4
10
48
49
61
90
541
72
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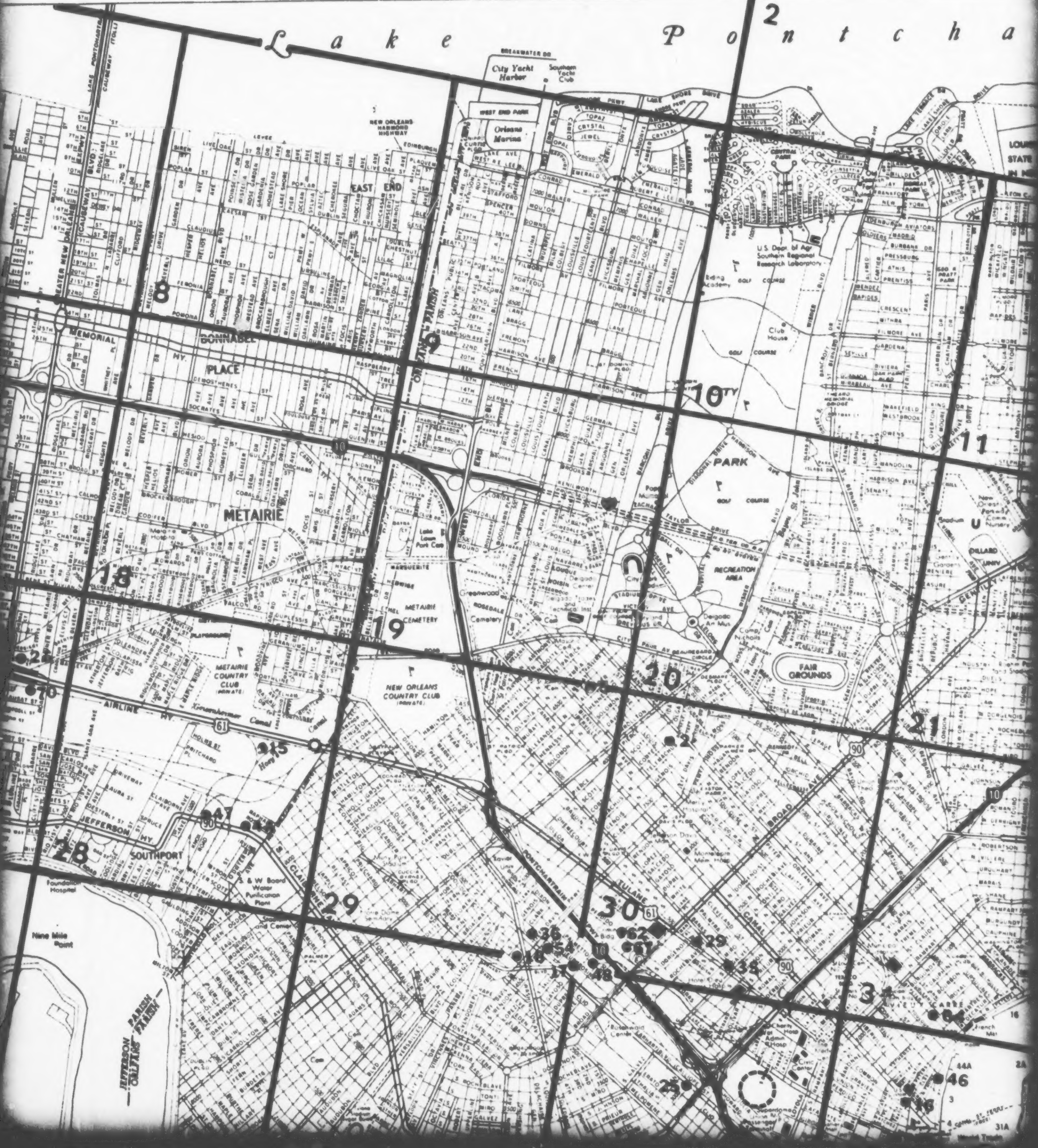
Lake Pontchartrain
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3
City Yacht Harbor
Southern Yacht Club
West End Park
Orleans Marina
East End
Bonnabel Place
Metairie
Memorial
Airline Hy.
Jefferson Hy.
Southport
Metairie Cemetery
Metairie Country Club (Private)
New Orleans Country Club (Private)
Lake Lawn Park Cem
Greenwood Cemetery
Park
Golf Course
Club House
Riding Academy
U.S. Dept. of Agr. Southern Regional Research Laboratory
Recreation Area
Fair Grounds
Delgado Art Mus
City Park Av
Dillard Univ
Foundation Hospital
Nine Mile Point
S & W Board Water Purification Plant
Jefferson Parish
Orleans Parish
Tulane
Canal
Broad
Pontchartrain
Vieux Carre
French Mkt
Civic Center
Rosenwald Center
Union Passenger Terminal
Xavier Univ
61
90
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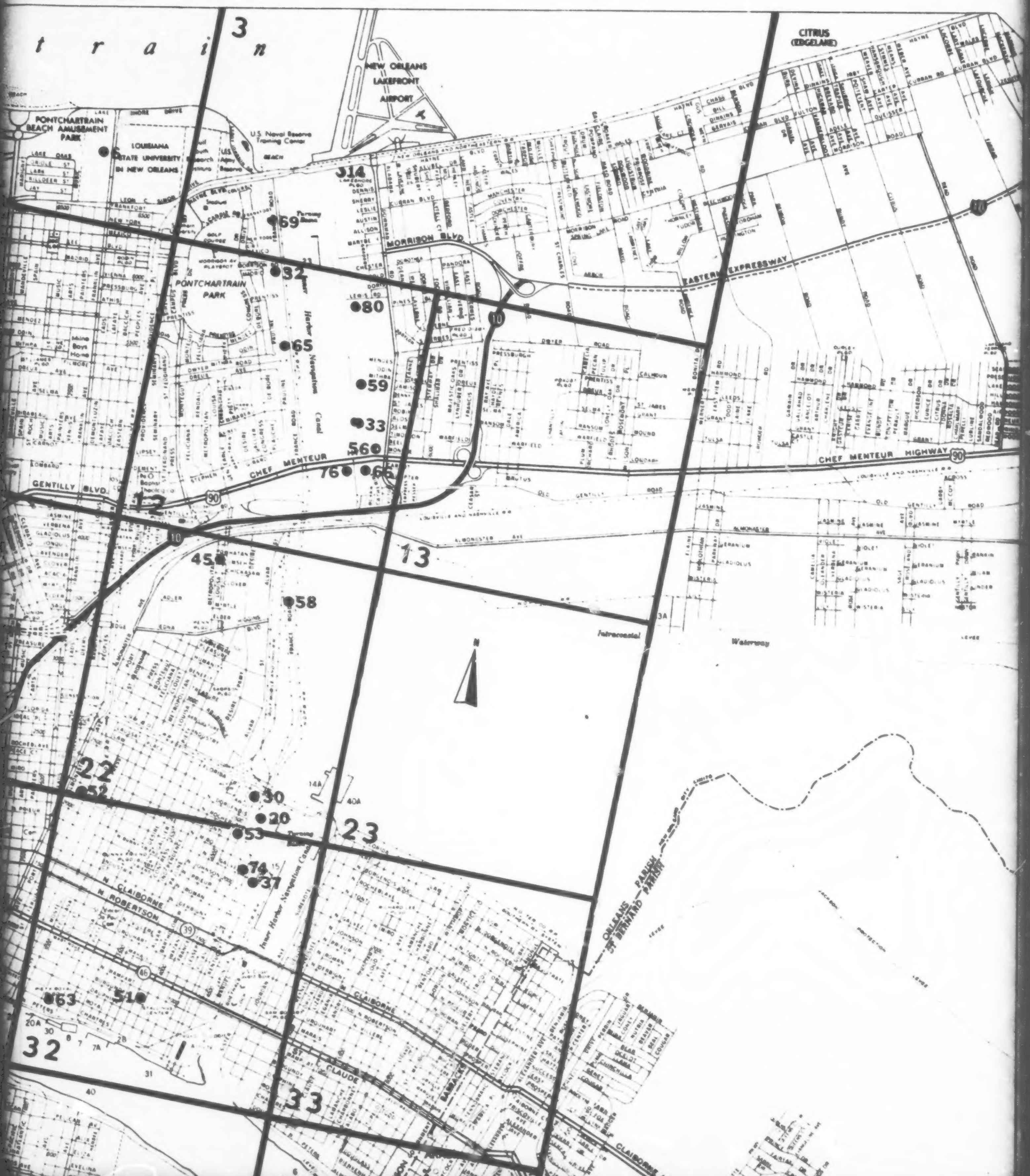
t r a i n
3
NEW ORLEANS LAKEFRONT AIRPORT
PONTCHARTRAIN BEACH AMUSEMENT PARK
LOUISIANA STATE UNIVERSITY IN NEW ORLEANS
U.S. Naval Reserve Training Center
CITRUS (EDGELAKE)
MORRISON BLVD
EASTERN EXPRESSWAY
PONTCHARTRAIN PARK
Inner Harbor Navigation Canal
CHEF MENTEUR
CHEF MENTEUR HIGHWAY
GENTILLY BLVD
12
13
22
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32
33
Intracoastal Waterway
ORLEANS PARISH
ST BERNARD PARISH
N CLAIBORNE
N ROBERTSON
ST CLAUDE
CLAIBORNE AVE
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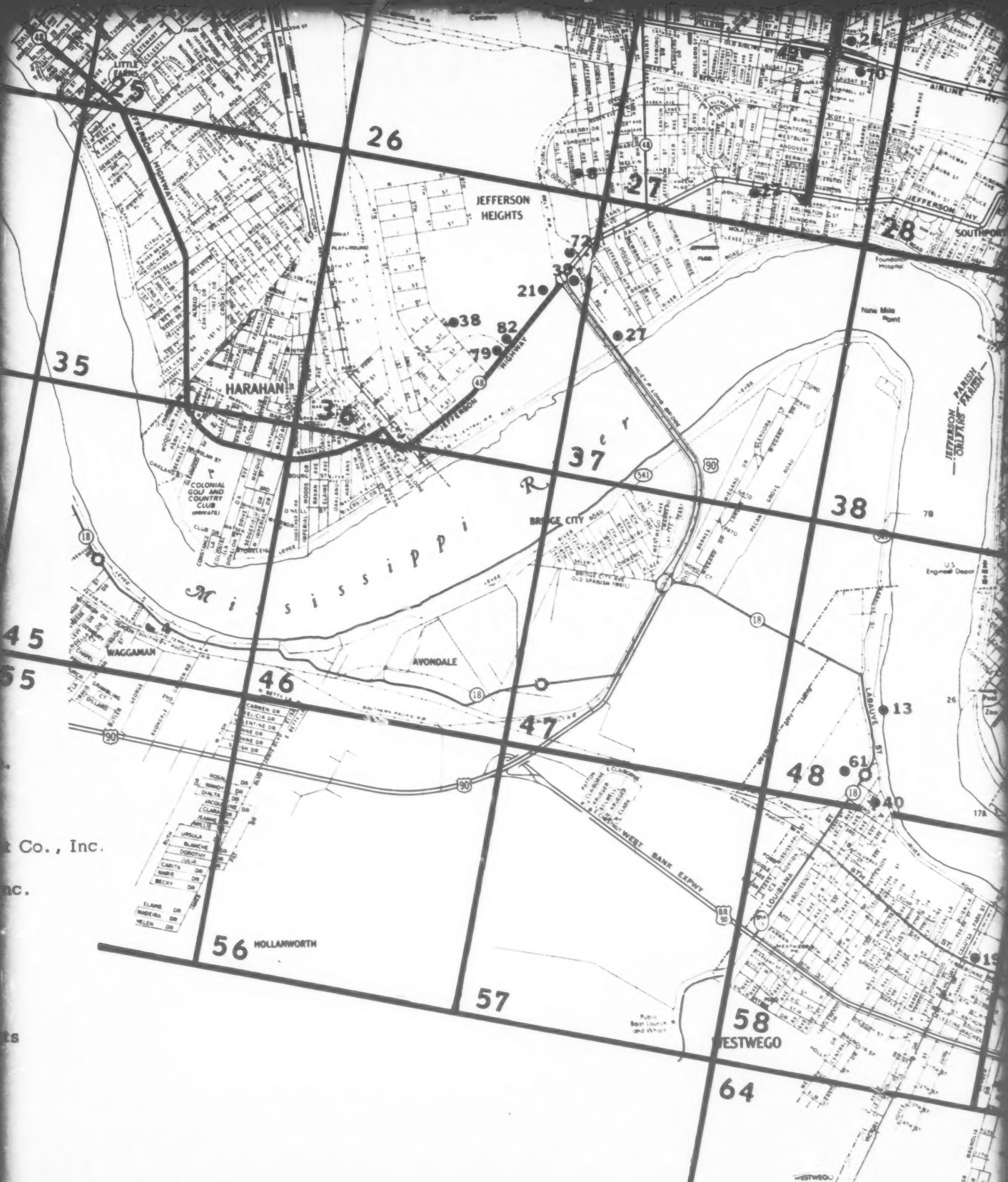
12 Avondale Shipyards, Inc.,
Standard Paint & Varnish Div.
13 Avondale Shipyards Inc.,
Westwego Yard
14 Baroid Division
National Lead Co.
15 Beldon Concrete Products, Inc.
16 Bernis Co., Inc.
17 Bernard Lumber Co., Inc.
18 Blue Plate Foods, Inc.
19 Celotex Corp.
20 Chase Bag Co.
21 Continental Can Co.,
Corrugated Containers Plant
22 Continental Can Co., Inc.
23 Continental Can Co., Inc.
24 Continental Can Co., Inc.
25 Continental Can Co., Inc.
26 Delta Petroleum Co., Inc.
27 Delta Steel Form & Fabricating Co., Inc.
28 Dickey Foods
29 Dixie Brewing Company, Inc.
30 Dixie Plastics Mfg. Co.
31 Dr. G. H. Tichenor Antiseptic Co., Inc.
32 Dresser Minerals,
Division of Dresser Industries
33 Equitable Equipment Co., Inc.
34 Evans Cooperage Co., Inc.
35 Falstaff Brewing Corp.
36 Flint Ink Corp.
37 Flintkote Co.
38 Frito-Lay, Inc.
39 Green-Walker Galvanizing Co., Inc.
40 Gulf States Asphalt Co.
41 Hobson Galvanizing Co., Inc.
42 Hunt Wesson Foods, Inc.
43 International Harvester Co.,
New Orleans Twine Mills
44 International Lubricant Corp.
45 International Paint Co., Inc.
46 Jackson Brewing Co.
47 Jahncke Service, Inc.
48 Jahncke Service, Inc.
49 Jimco, Inc.
50 Johns-Manville Products Corp.
51 L. A. Frey & Sons, Inc.
52 Leto Packing, Inc.
53 Lone Star Industries, Inc.
54 The Louisiana Coca-Cola Bottling Co., Ltd.
Main Plant
55 The Louisiana Coca-Cola Bottling Co., Ltd.
Gretna Plant
56 Luzianne Coffee Co.
57 Marine Cathodic Protection, Inc.
58 Mechanical Equipment Co., Inc.
59 Milchem, Inc.
Mineral Div. New Orleans Plant
60 National Gypsum Company,
New Orleans Plant

61 National Gypsum Company,
Westwego
62 New Orleans Cement Product Co.
63 Olinkraft, Inc.
Container Plant
64 Orleans Manufacturing Co.
65 Orleans Materials and Equipment
66 Owens-Illinois, Inc.
67 Pre-Cast Concrete Steps Co., In
68 Publicker Chemical Corp.
69 Radcliff Materials, Inc.
70 Radcliff Materials, Inc.
71 R. E. Schanzer, Inc.
72 Rheem Mfg. Co.
73 R. J. Foods, Inc.
74 Southern Johns-Manville Product
75 Southern Paper Co., Ltd.
76 Standard Brands, Inc.
77 Swift Edible Oil Co.
78 Todd Shipyards Corp.
79 Underwood Glass Co.
80 United States Gypsum Co.
81 Westvaco Corp.
82 Weyerhauser Co.
83 Witco Chemical Corp.,
Gretna Plant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LITTLE FARMS
JEFFERSON HEIGHTS
HARAHAN
COLONIAL GOLF AND COUNTRY CLUB (PRIVATE)
SOUTHPORT
Foundation Hospital
Nine Mile Point
JEFFERSON PARISH
ORLEANS PARISH
Mississippi River
BRIDGE CITY ROAD
WAGGAMAN
AVONDALE
U.S. Engineer Depot
HOLLANWORTH
WEST BANK EXPWY
Public Boat Launch and Wharf
WESTWEGO
WESTWEGO AIRPORT
AIRLINE HY.
JEFFERSON HY.
JEFFERSON HIGHWAY
LABAUVE ST
72
39
21
38
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19

. Co., Inc.

nc.

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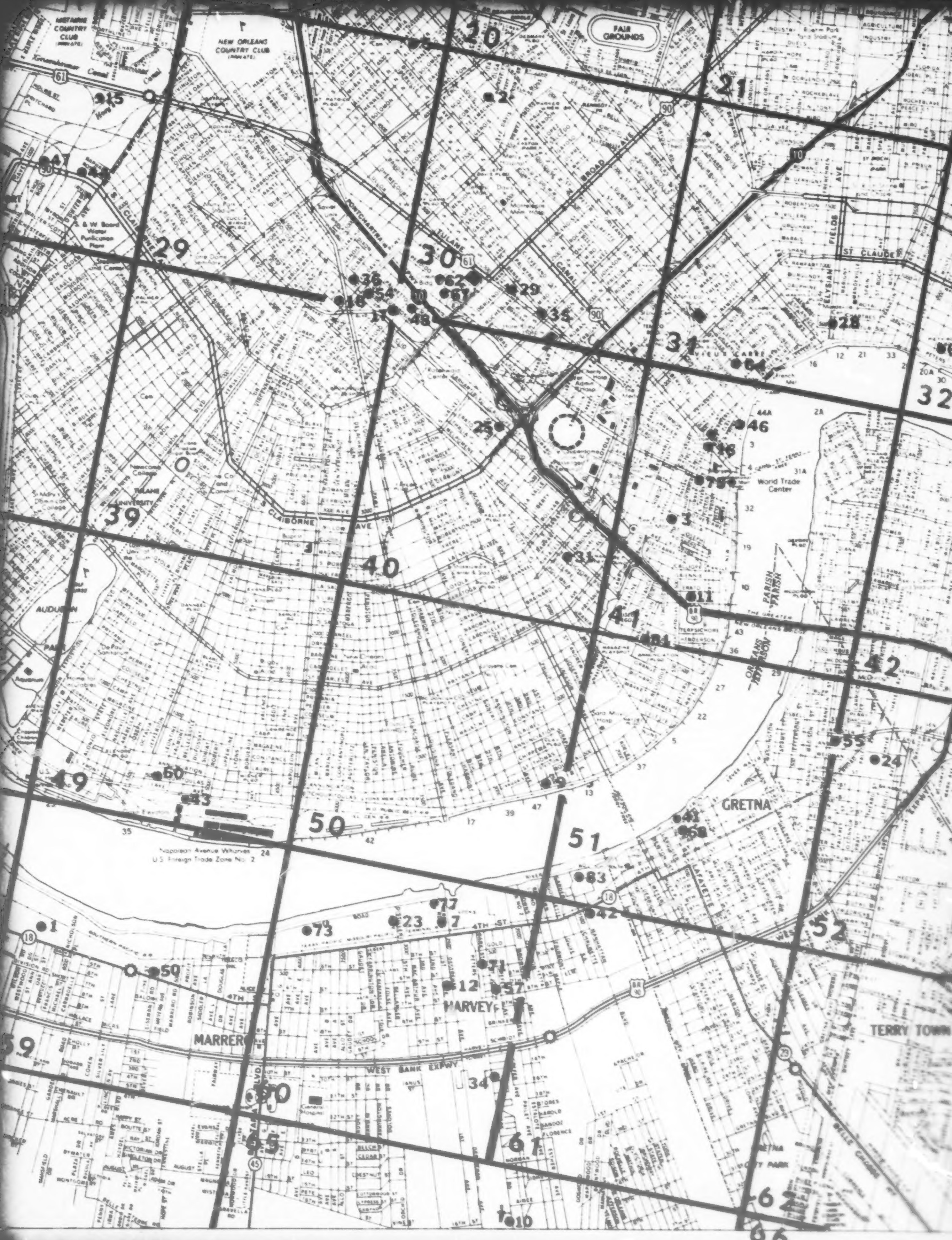
METAIRIE COUNTRY CLUB
NEW ORLEANS COUNTRY CLUB
FAIR GROUNDS
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81
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73
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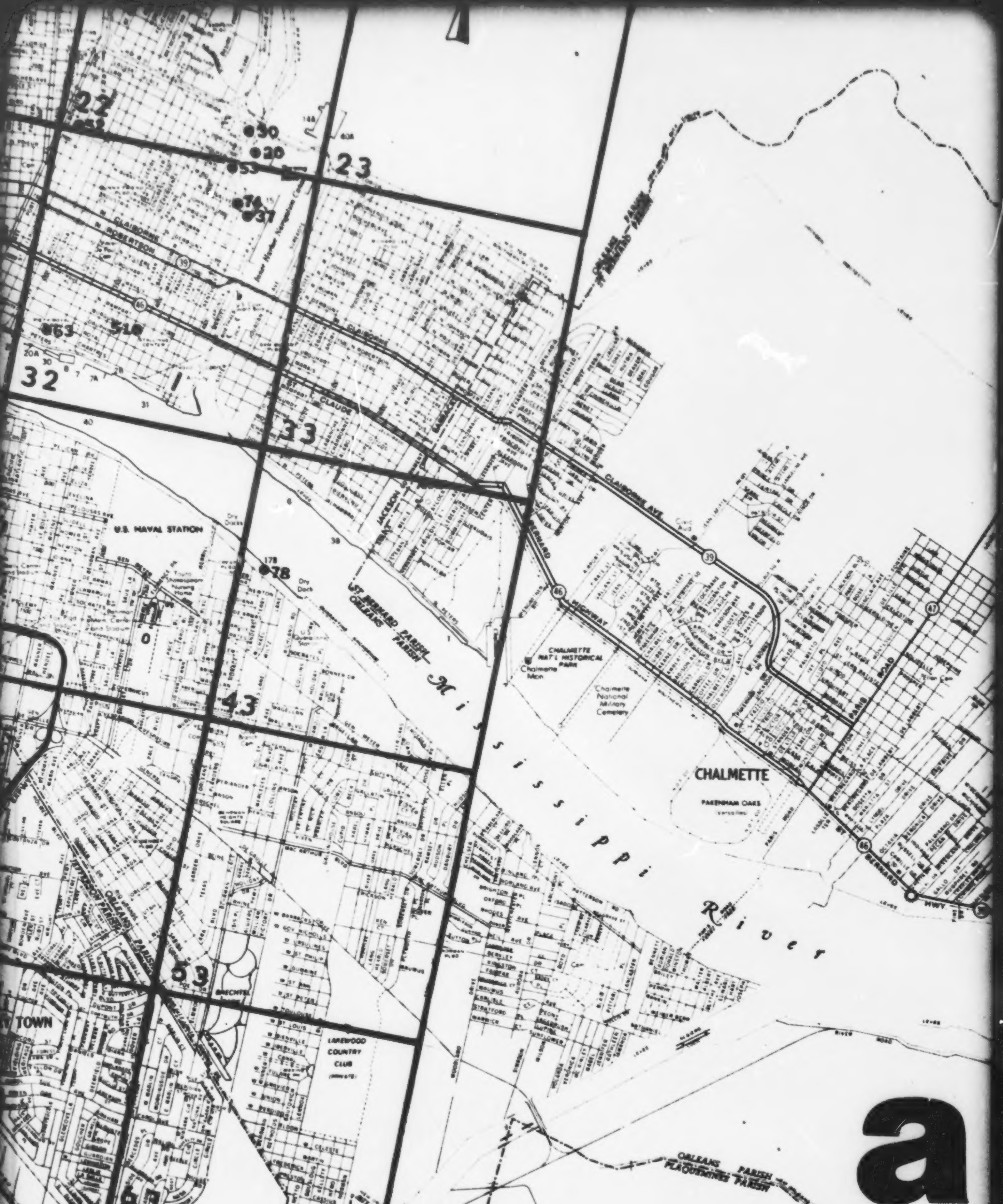
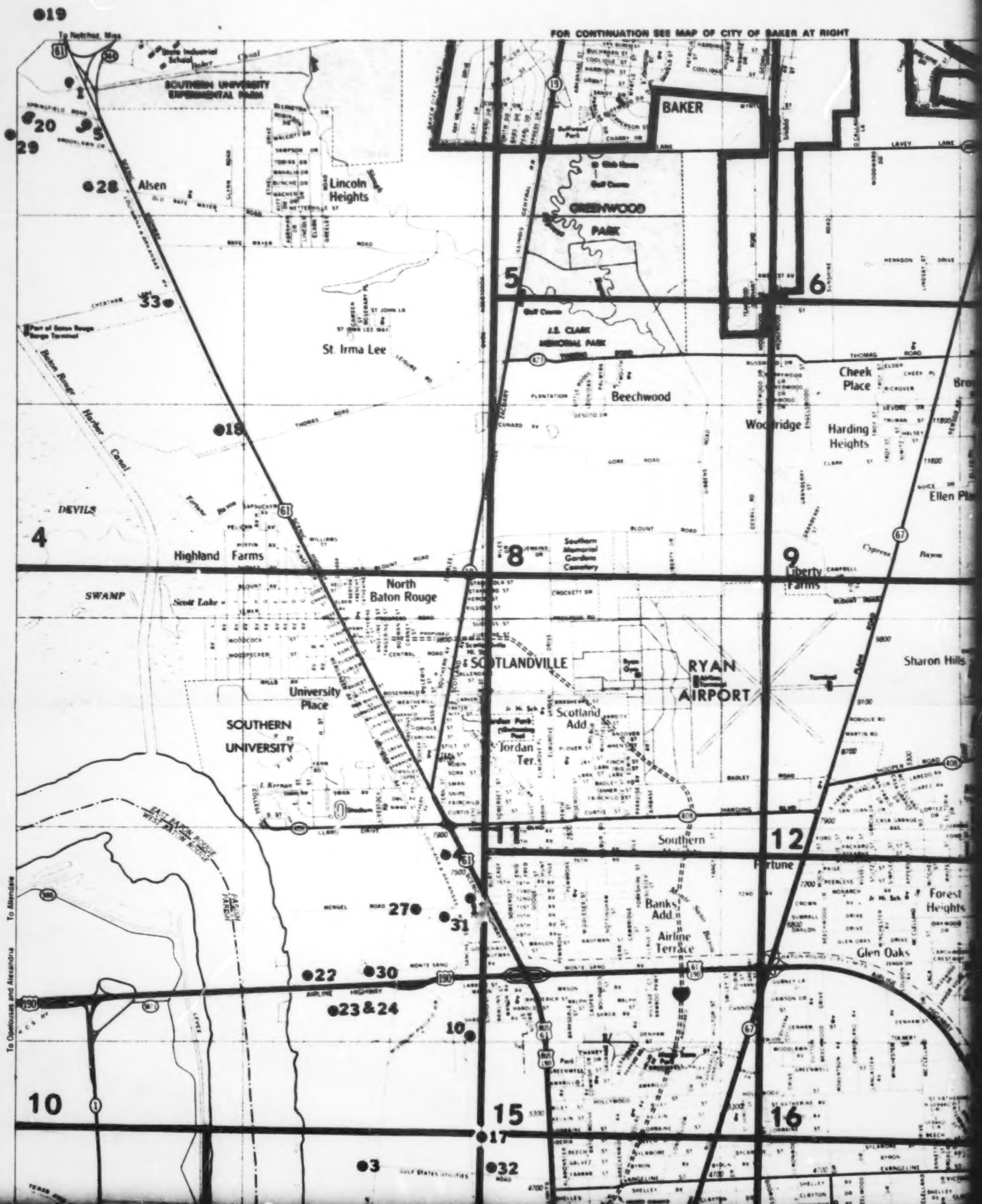
71
12
57
34
10
S & W Board Water Purification Plant
Newcomb College
TULANE UNIVERSITY
St Mary's Dominican College
AUDUBON PARK
TULANE
CANAL
BROAD
CLAIBORNE AVE
ST CLAUDE
ELYSIAN FIELDS AVE
VIEUX CARRE
World Trade Center
ORLEANS PARISH
JEFFERSON PARISH
Napoleon Avenue Wharves
U.S. Foreign Trade Zone No. 2
GRETNA
HARVEY
MARRERO
TERRY TOWN
WEST BANK EXPWY
4TH ST
BELLE CHASSE
61
90
10
18
45
23


22
●50
●20
●53
23
●74
●37
CLAIBORNE
ROBERTSON
39
86
●63
510
32
ST CLAUDE
33
U.S. NAVAL STATION
Dry Docks
●78
Dry Dock
ST. BERNARD PARISH
ORLEANS PARISH
ORLEANS PARISH
ST. BERNARD PARISH
CLAIBORNE AVE
Civic Aud
ST BERNARD
HIGHWAY
CHALMETTE NAT'L HISTORICAL PARK
Chalmette Mon
Chalmette National Military Cemetery
Mississippi River
43
CHALMETTE
PAKENHAM OAKS
PARIS ROAD
47
HWY
53
LAKEWOOD COUNTRY CLUB (PRIVATE)
TOWN
63
LEVEE
ORLEANS PARISH
PLAQUEMINES PARISH
a


FOR CONTINUATION SEE MAP OF CITY OF BAKER AT RIGHT
To Natchez, Miss.
●19
State Industrial School
SOUTHERN UNIVERSITY EXPERIMENTAL PARK
Canal
●20
●29
5
●28
Alsen
Lincoln Heights
BAKER
GREENWOOD PARK
Golf Course
5
6
●33
Port of Baton Rouge Barge Terminal
Baton Rouge Harbor Canal
J.S. CLARK MEMORIAL PARK
St. Irma Lee
THOMAS ROAD
Beechwood
Cheek Place
Woodridge
Harding Heights
●18
DEVILS
SWAMP
4
Highland Farms
8
Southern Memorial Gardens Cemetery
9
Liberty Farms
Ellen Pl
Sharon Hills
North Baton Rouge
Scott Lake
SCOTLANDVILLE
RYAN AIRPORT
University Place
SOUTHERN UNIVERSITY
Scotland Add.
Jordan Ter.
Jordan Park
EAST BATON ROUGE
WEST BATON ROUGE
PARISH
HARDING BLVD
11
Southern
12
Fortune
Forest Heights
27●
●31
Banks Add.
Airline Terrace
Glen Oaks
●22
●30
AIRLINE HIGHWAY
●23 & 24
10●
To Opelousas and Alexandria
To Allendale
10
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●3
●32
GULF STATES UTILITIES
61
190
67
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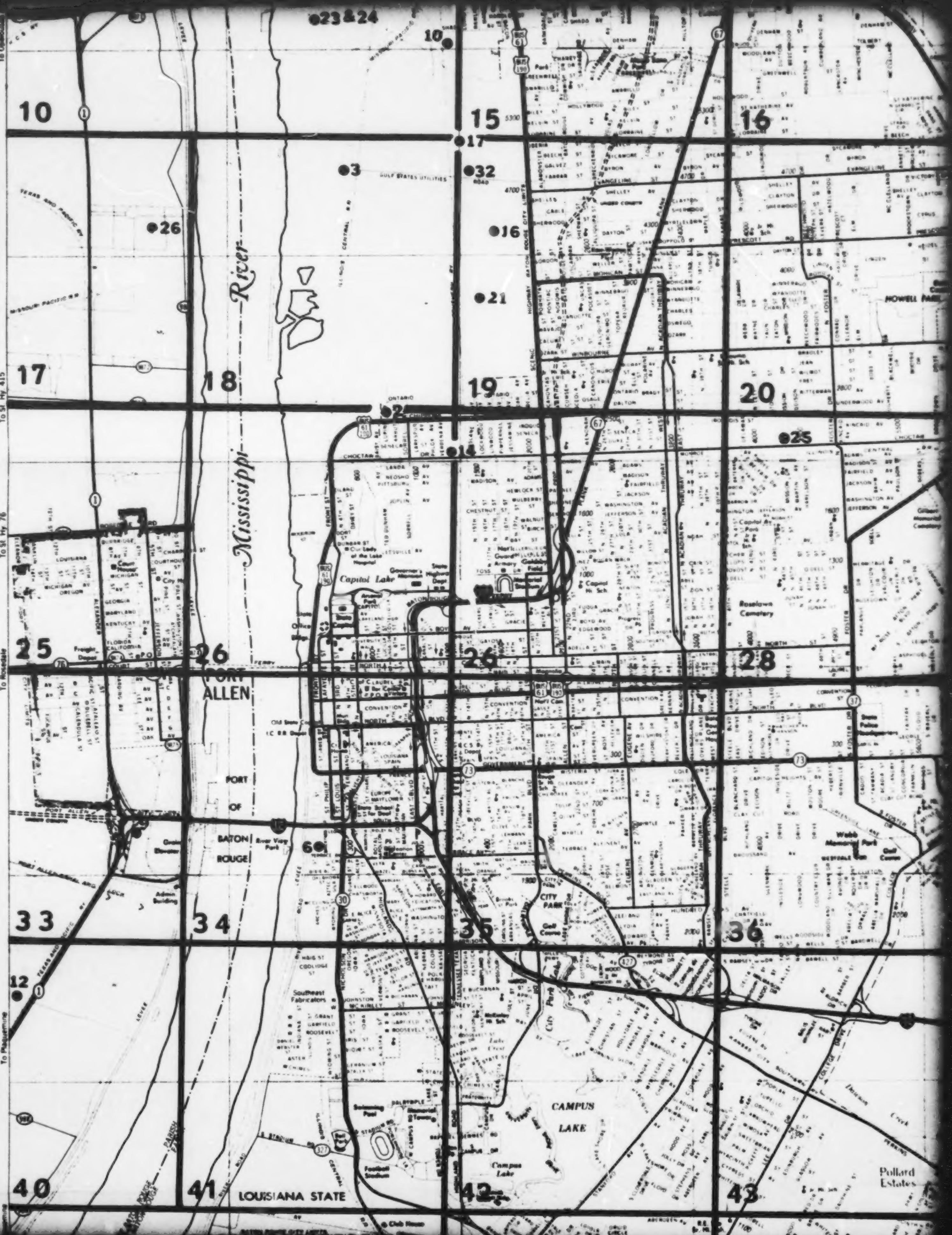
408
423


To Opelousas
To St Hy 415
To St Hy 76
To Rosedale
To Plaquemine
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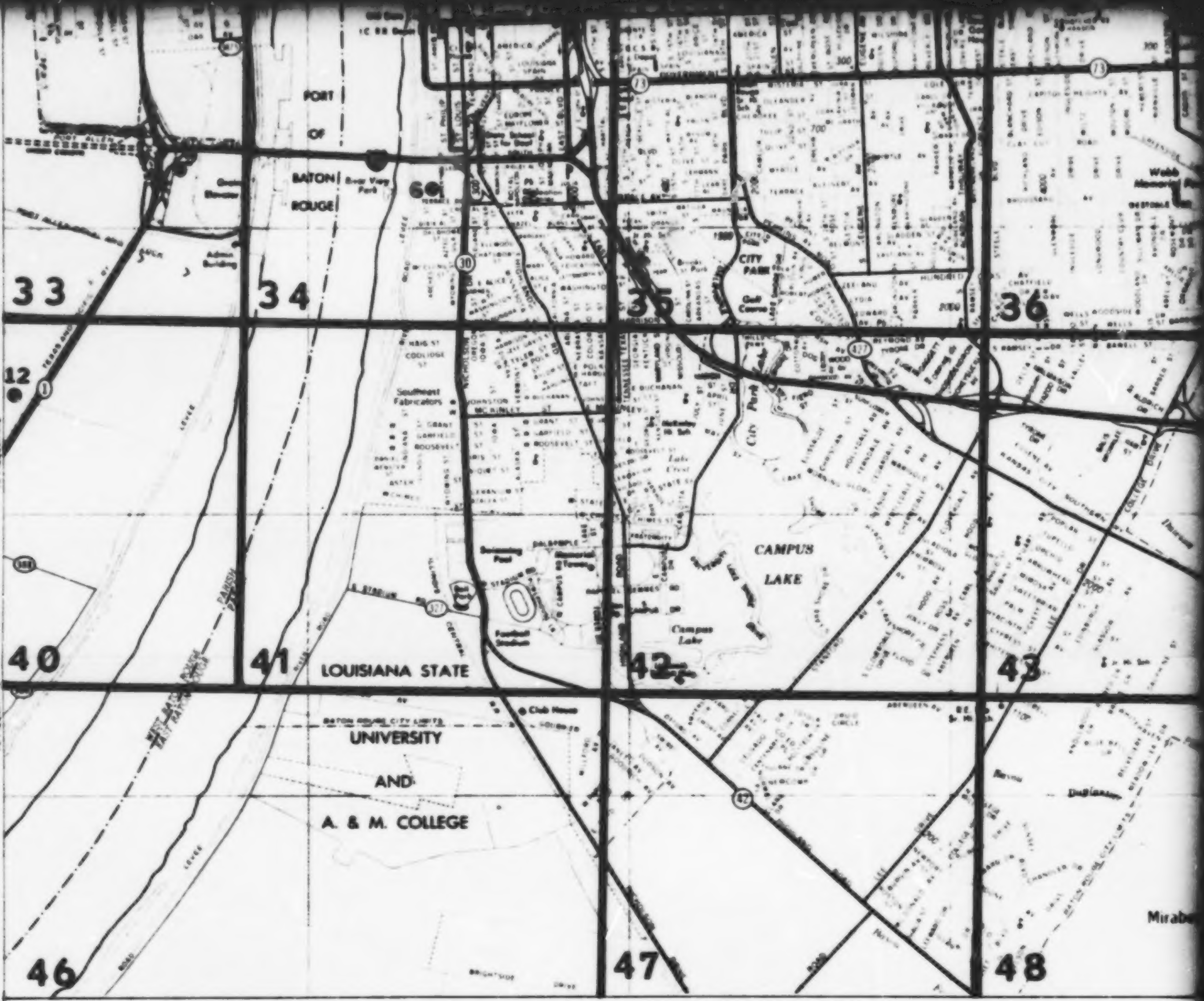
42
43
●23 & 24
●10
●17
●3
●32
●26
●16
●21
●2
●14
●25
●6
●12
GULF STATES UTILITIES
Mississippi River
PORT ALLEN
PORT OF BATON ROUGE
Capitol Lake
Roselawn Cemetery
HOWELL PARK
Webb Memorial Park
CITY PARK
CAMPUS LAKE
Campus Lake
LOUISIANA STATE
Football Stadium
Pollard Estates
Southeast Fabricators
Admin Building
Grain Elevator
Freight Depot
Court House
State Police Headquarters
Gilbert Memorial Cemetery


PORT OF BATON ROUGE
33
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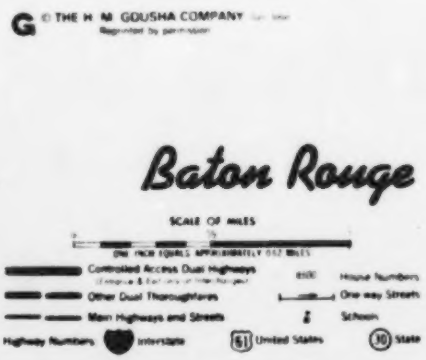
6
CITY PARK
CAMPUS LAKE
LOUISIANA STATE UNIVERSITY AND A. & M. COLLEGE
Southeast Fabricators
To Plaquemine
Mirabe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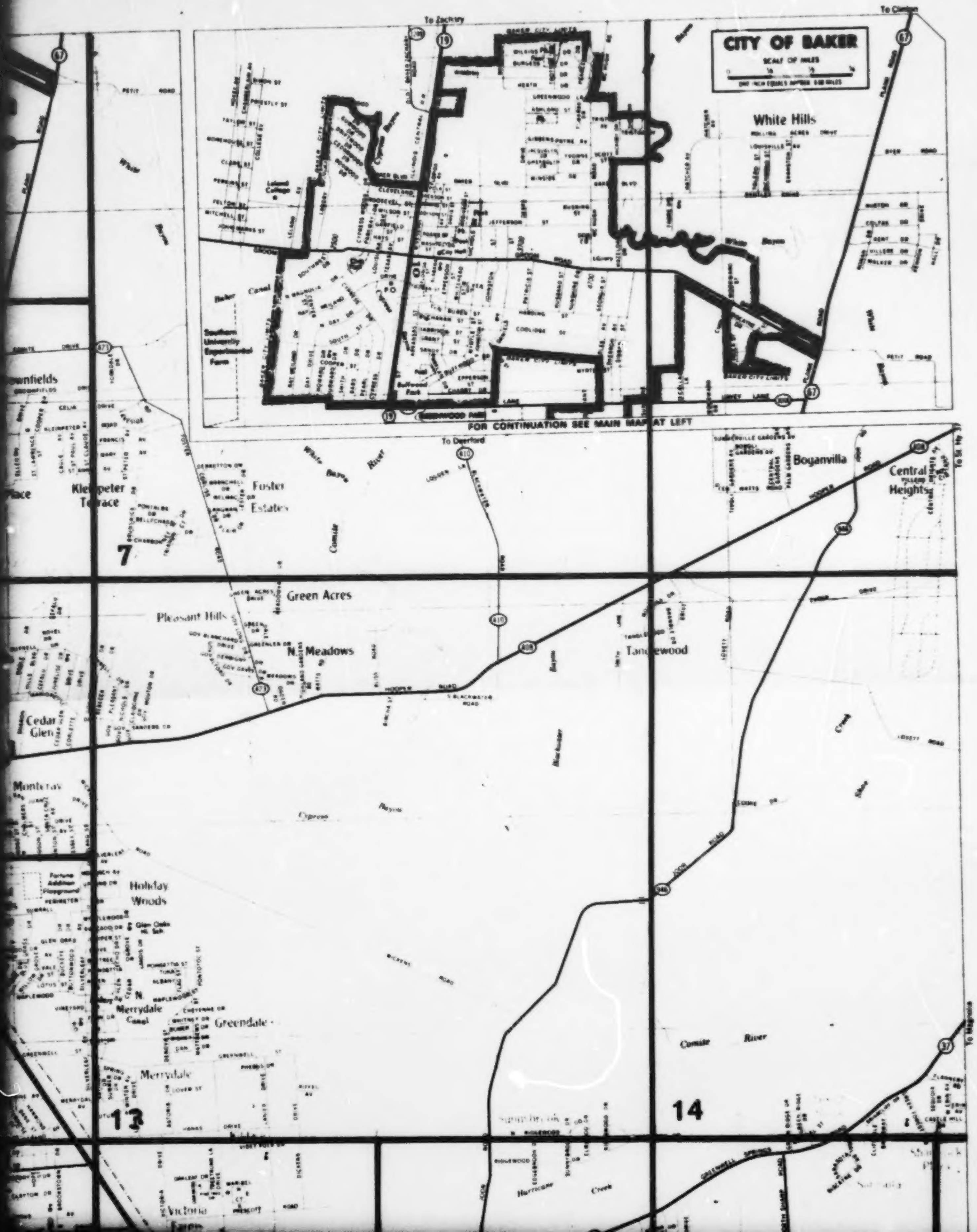
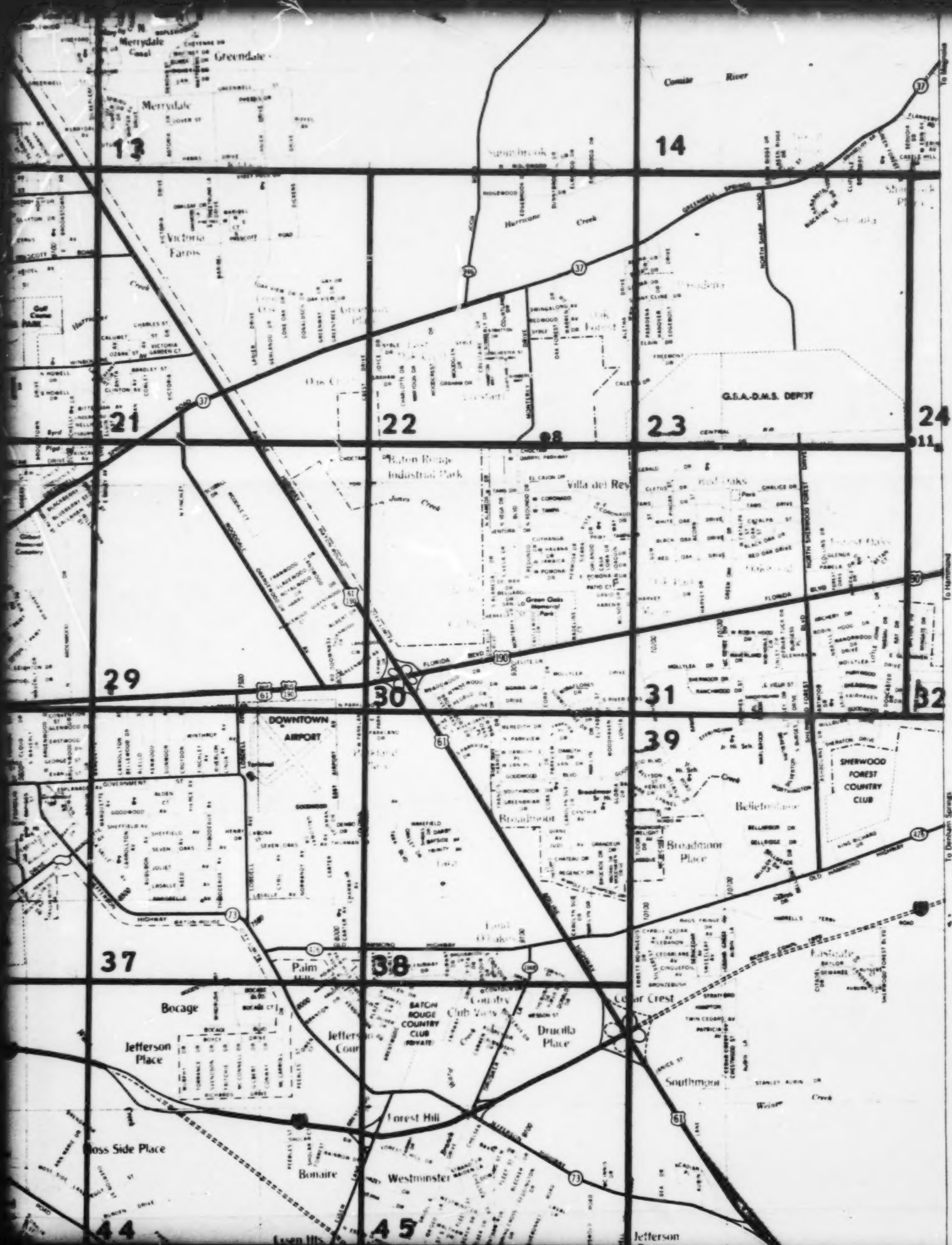
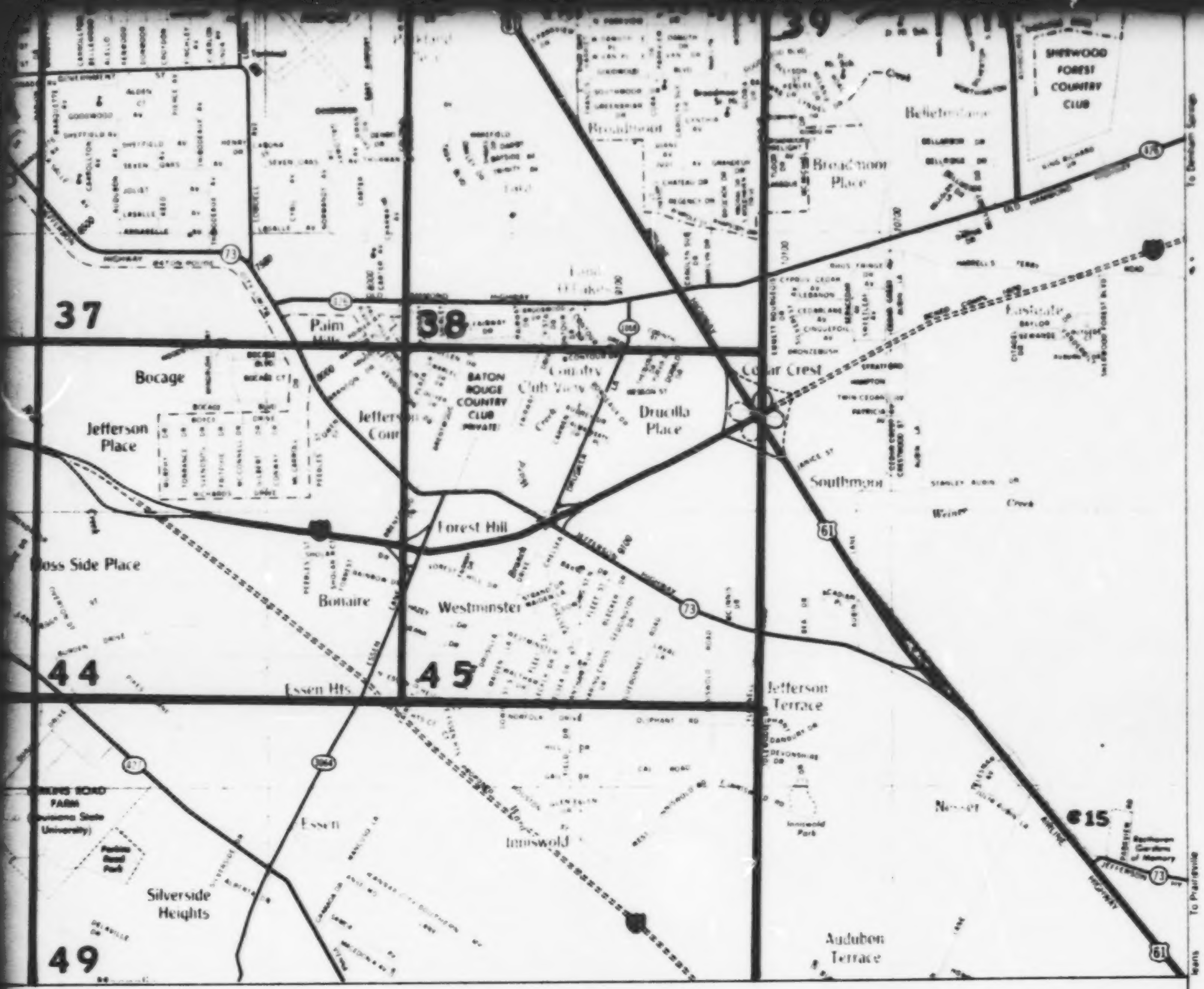
Baton Rouge
SCALE OF MILES
Controlled Access Dual Highways
Other Dual Thoroughfares
Main Highways and Streets
House Numbers
One-way Streets
Schools
Highway Numbers
Interstate
United States
State

NUMBER	COMPANY NAME
1	Acme Brick Co.
2	Allied Chemical Corp., Specialty Chemicals Div.
3	Allied Chemical Corp., Industrial Chemicals Div.
4	Armco Steel Corp.
5	Best Manufacturing Co., Inc.
6	Chevron Asphalt Co.
7	Cinclaire Central Factory
8	Clegg Concrete, Inc.
9	Community Coffee Co., Inc.
10	Copolymer Rubber & Chemical Co Baton Rouge, La. Plant


CITY OF BAKER
SCALE OF MILES
To Zachary
To Clinton
White Hills
Baker Canal
Southern University Experimental Farm
BAKER CITY LIMITS
Bullwood Park
FOR CONTINUATION SEE MAIN MAP AT LEFT
To Deerford
White Bayou River
Comite
Foster Estates
Kleinpeter Terrace
Place
Brownfields
Boganvilla
Central Heights
To St. Francisville
7
Green Acres
Pleasant Hills
N. Meadows
Tanglewood
Cedar Glen
Monterey
Cypress Bayou
Blackwater Bayou
Shoe Creek
Holiday Woods
Fortune Addition Playground
Glen Oaks Hi. Sch.
N. Merrydale Canal
Greendale
Merrydale
Comite River
To Magnolia
13
14
Hurricane Creek
Victoria Farms
HOOPER ROAD
PLANK ROAD
GREENWELL SPRINGS
67
19
408
410
423
946
37


Merrydale
Greendale
Merrydale
Comite River
13
14
Victoria Farms
Hurricane Creek
Oak Forest
G.S.A.-D.M.S. DEPOT
21
22
23
24
Baton Rouge Industrial Park
Jones Creek
Villa del Rey
Red Oaks
Forest Oaks
Green Oaks Memorial Park
Florida Blvd
29
30
31
32
DOWNTOWN AIRPORT
39
SHERWOOD FOREST COUNTRY CLUB
Broadmoor
Bellefontaine
Broadmoor Place
37
38
Palm Hills
Bocage
Jefferson Place
BATON ROUGE COUNTRY CLUB (PRIVATE)
Country Club View
Drusilla Place
Cedar Crest
Eastgate
Southmoor
Forest Hill
Ross Side Place
Bonaire
Westminster
44
45
Jefferson
To Hammond
To Denham Springs
37
61
190
73
426


37
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49
Sherwood Forest Country Club
Broadmoor
Broadmoor Place
Land O'Lakes
Palm Hills
Bocage
Jefferson Place
Jefferson Court
Country Club View
Baton Rouge Country Club Private
Drusilla Place
Cedar Crest
Eastgate
Southmoor
Forest Hill
Moss Side Place
Bonaire
Westminster
Essen Hts
Jefferson Terrace
Essen
Inniswold
Silverside Heights
Nesser
Audubon Terrace
615
Resthaven Gardens of Memory
To Denham Springs
To Prairieville
73
61

Daniell Battery Mfg. Co., Inc.
Dolese Concrete Co.
Dolese Concrete Co.
Dolese Concrete Co.
Dolese Concrete Co.
Enjay Chemical Company
Ethyl Corp.
Foster Grant Co., Inc.
Resins Div.
Grant Chemicals, Inc.
Grow Chemical Coatings Corp.
Humble Oil & Refining Co.
Ideal Cement Company
Kaiser Aluminum & Chemical Corp., Chemical Div.

24 Kaiser Aluminum & Chemical Corp., Metals Div.
25 Morning Treat Coffee Co., Inc.
26 Poplar Grove Planting & Refinery Co., Inc.
27 Real Kill Products, Div. of Cook Chemical Co.
28 Rollins-Purle Corp.
29 Schuylkill Products Co., Inc.
30 Stauffer Chemical Co., Industrial Chemical Div.
31 Stupp Corp.
32 Uniroyal, Inc., Chemical Div.
33 Uniroyal, Inc.

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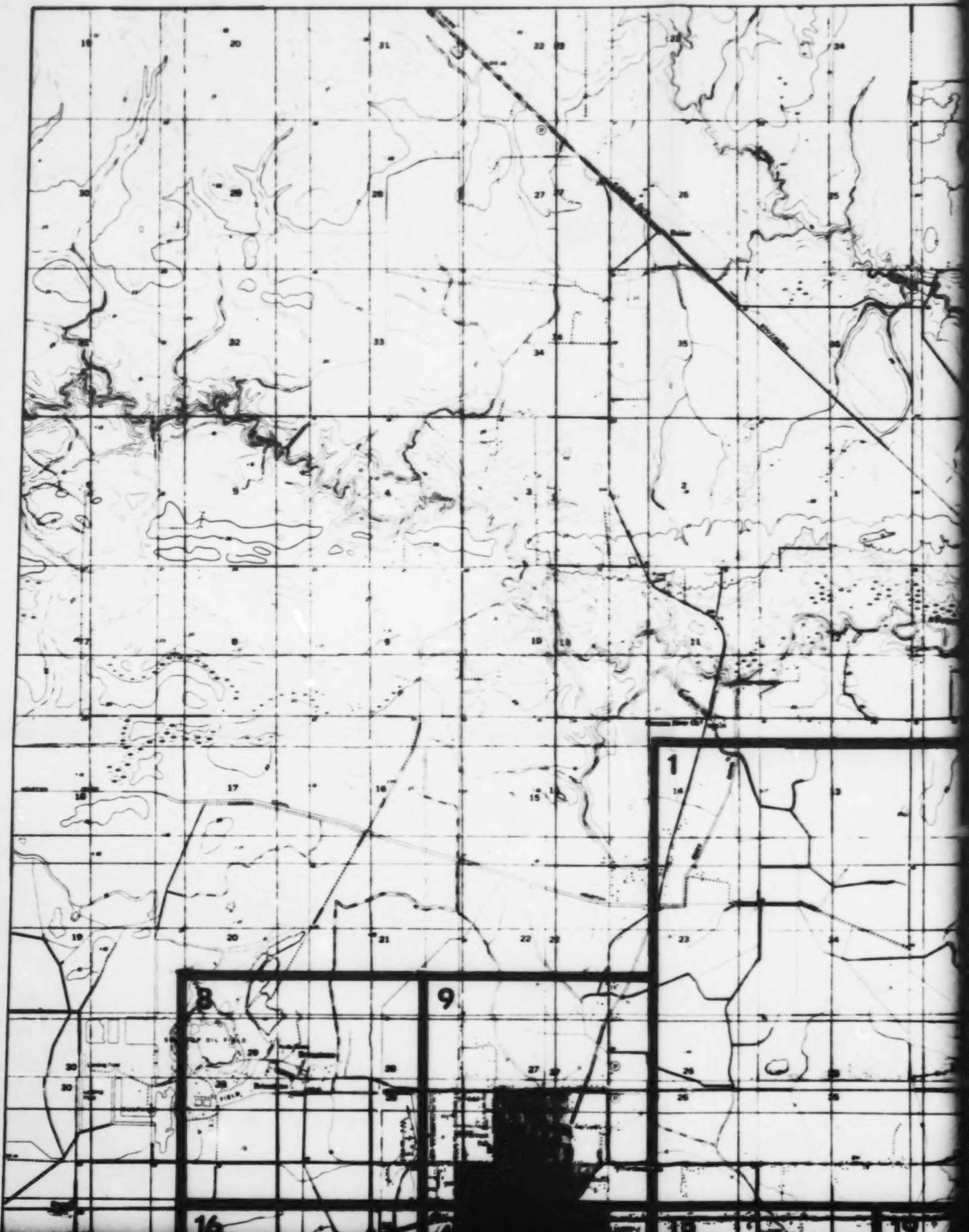
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OIL FIELD
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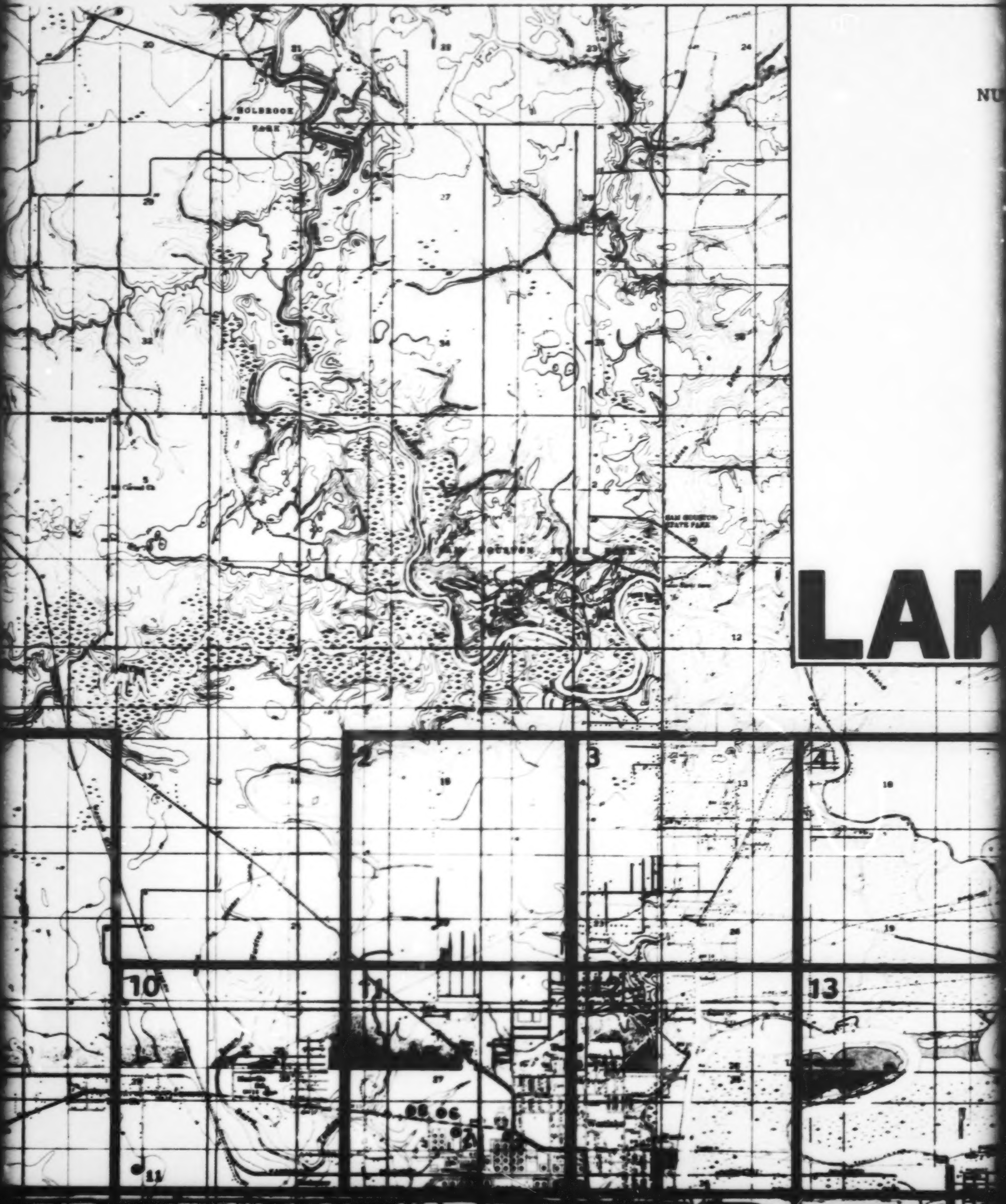
HOLBROOK PARK
SAM HOUSTON STATE PARK
NU
LAK
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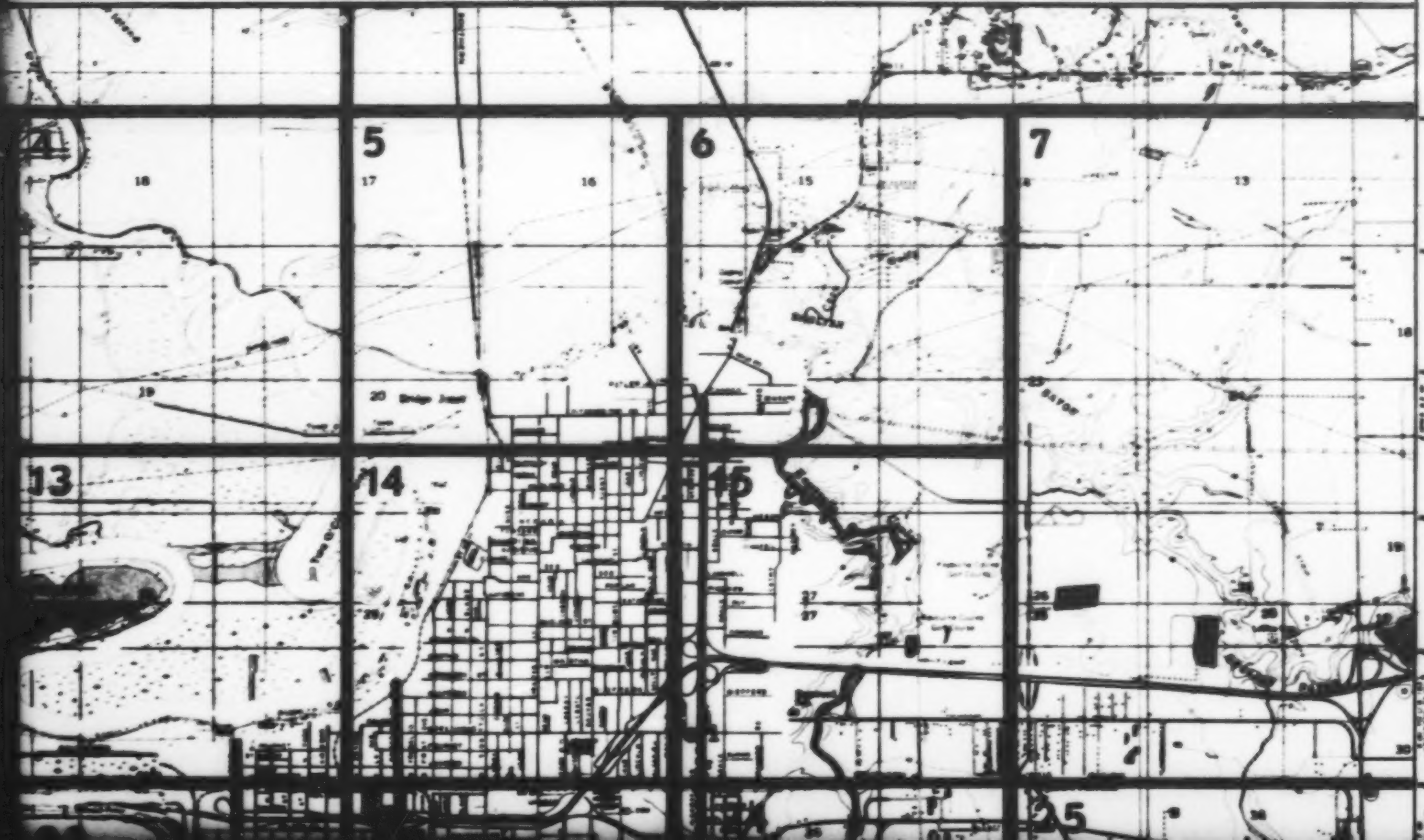
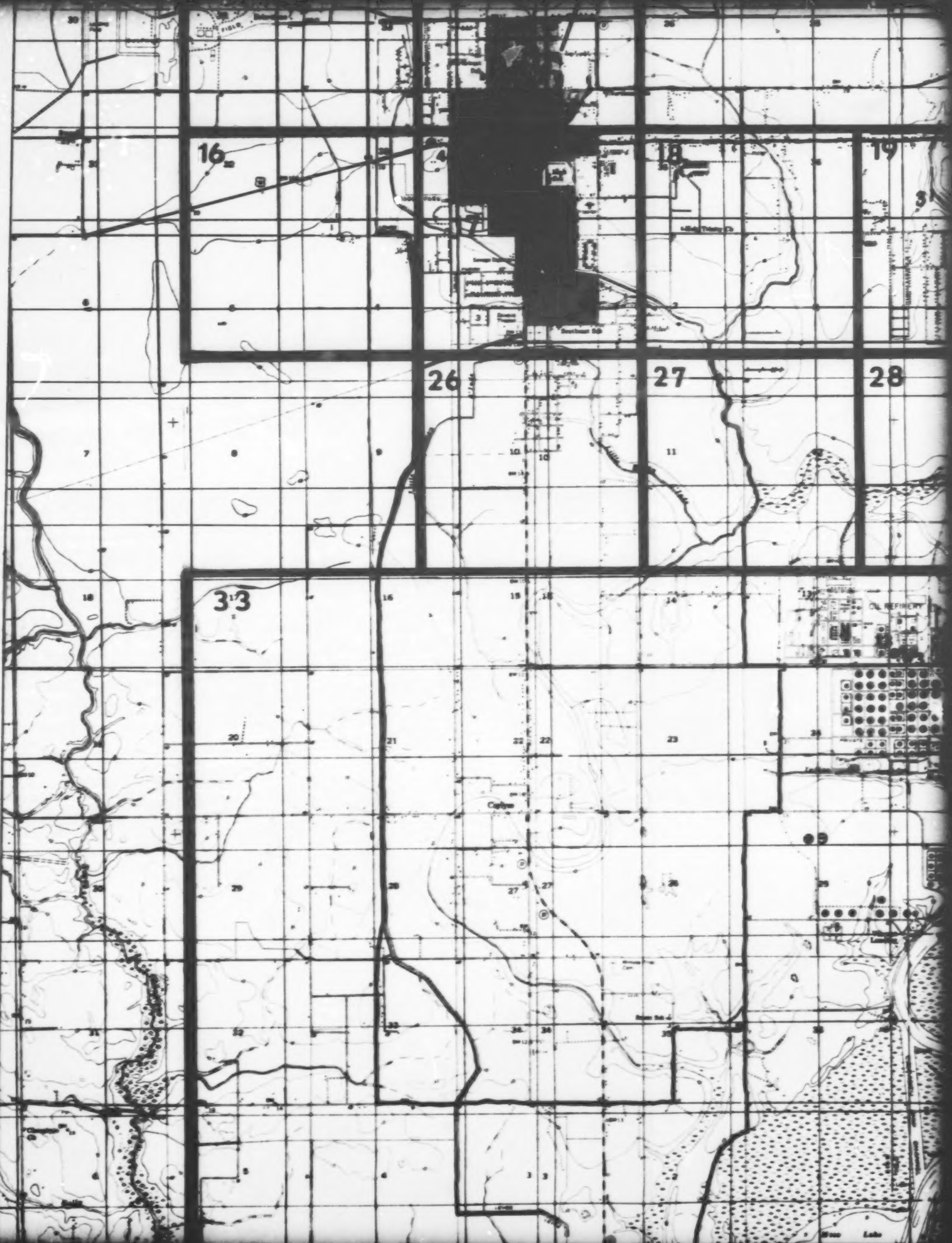
13

NUMBER	COMPANY NAME
1	Admiral Paint Co., Inc.
2	Ancon Chemical Corp.
3	Cities Service Oil Co.
4	Como & Lafleur Concrete Works, Inc.
5	Concrete Pipe Products Co.
6	Continental Carbon Co.
7	Continental Oil Co.
8	Continental VCM Plant
9	Davison Chemical Div., W. R. Grace & Co.
10	Dresser Minerals, Div. of Dresser Industries
11	Dunham-Price, Inc.
12	Farmers Rice Milling Co.
13	Firestone Synthetic Rubber & Latex Co.
14	Gulf Coast Aluminum Corp.
15	Hercules, Inc.
16	Molbert Bros. Poultry & Egg Co., Inc.
17	Olin Corp.
18	Olin Corp.
19	PPG Industries

LAKE CHARLES




16
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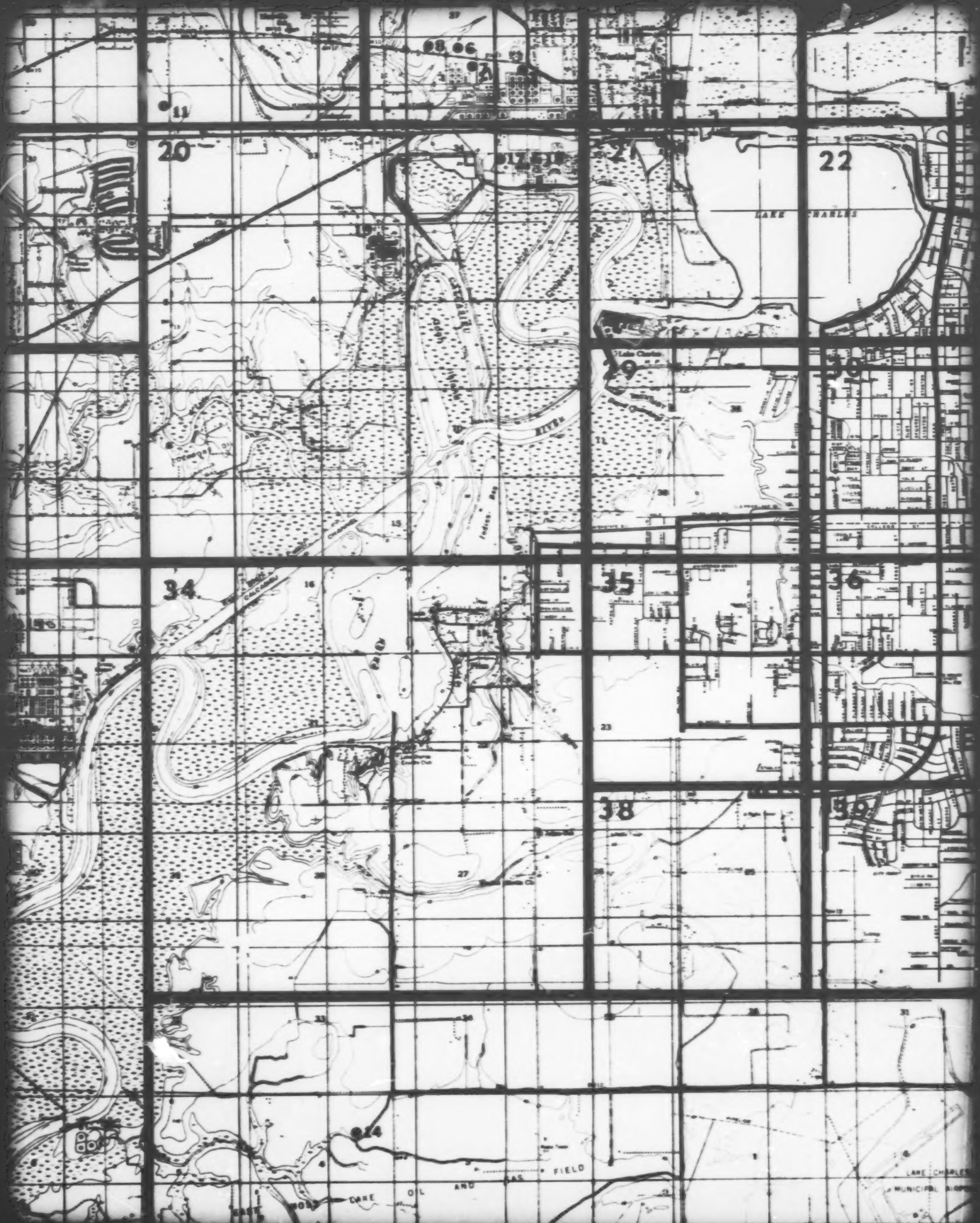
33
OIL REFINERY



11
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LAKE CHARLES
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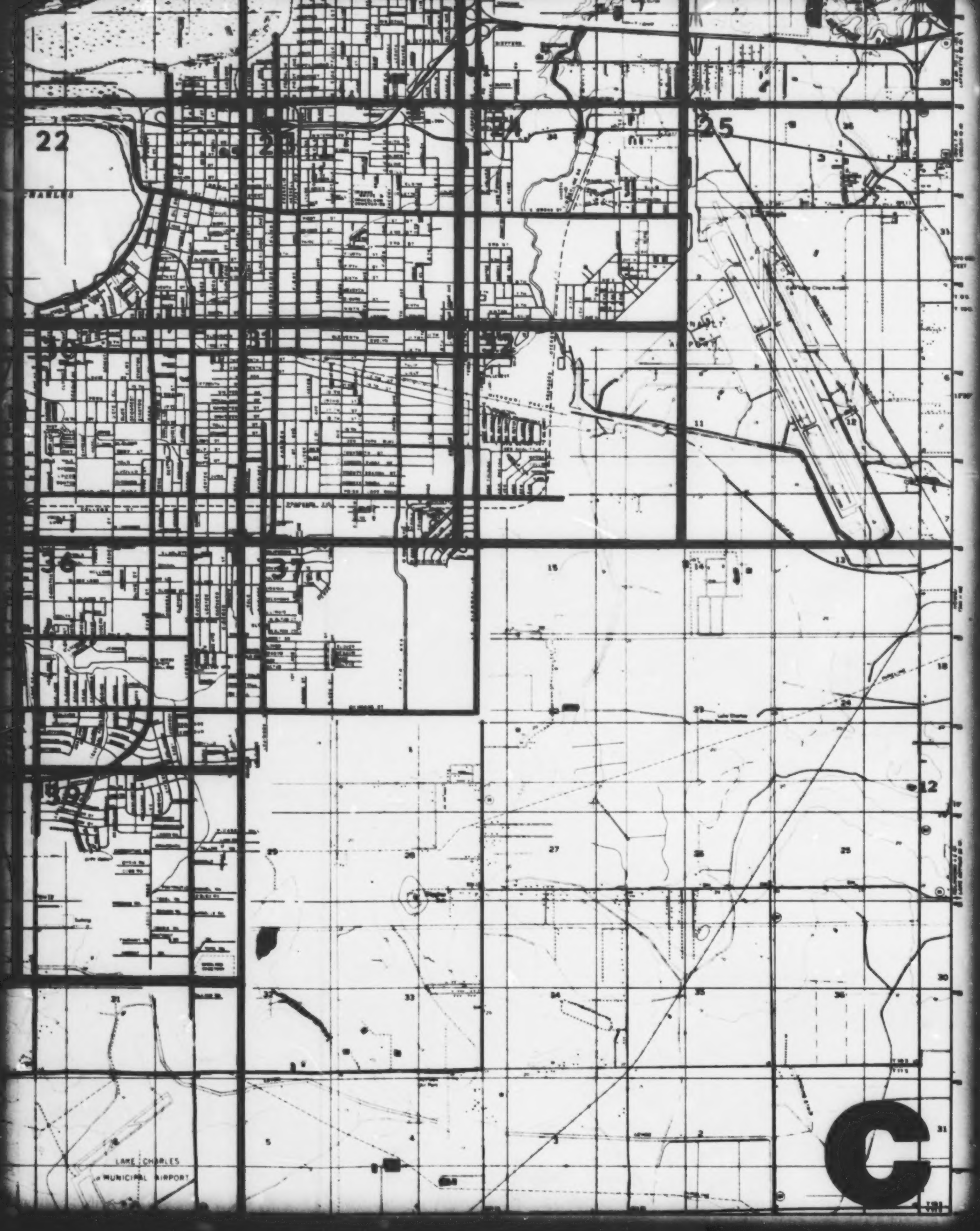
RIVER
FIELD
OIL
AND
GAS
LAKE CHARLES
MUNICIPAL AIRPORT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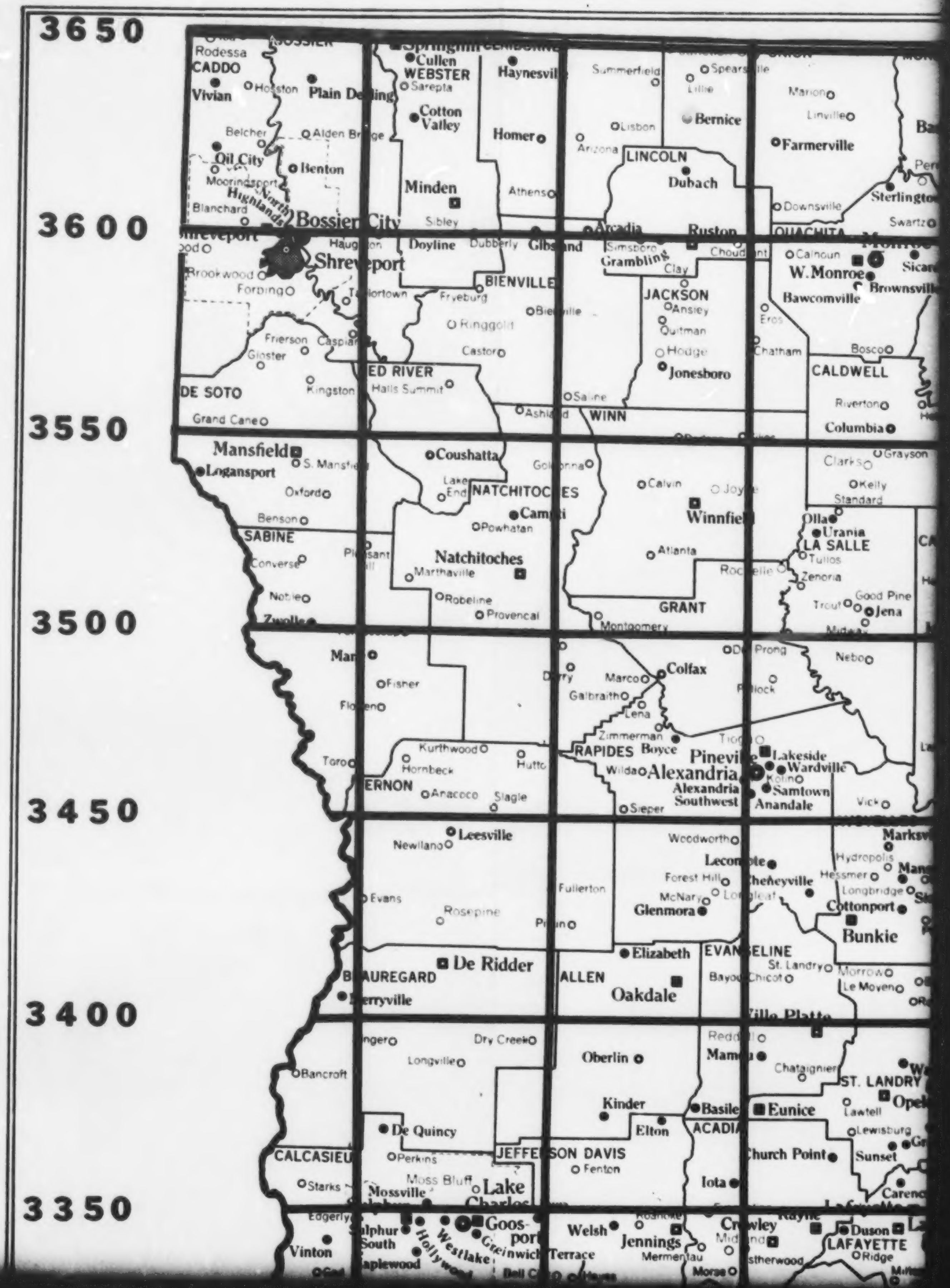
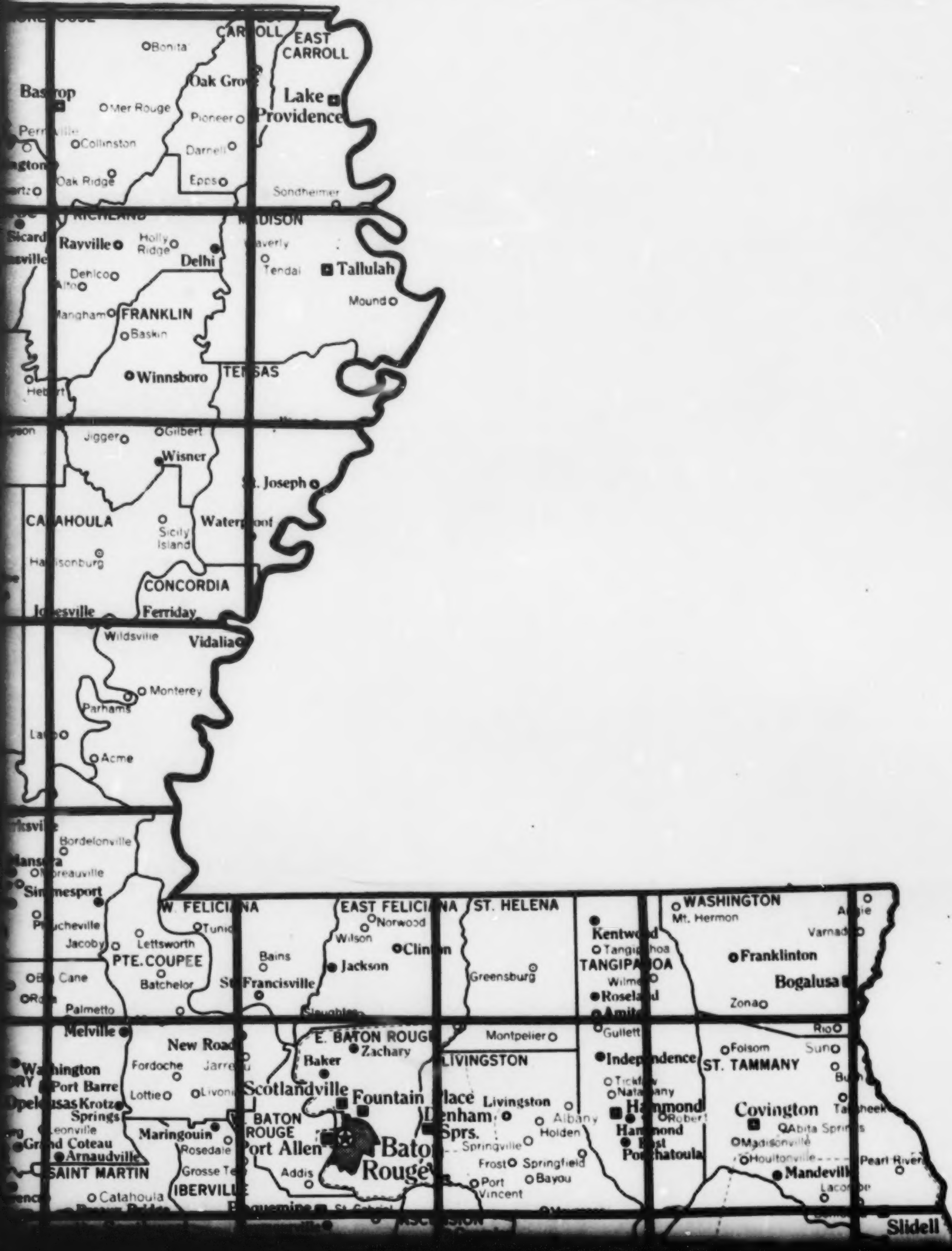
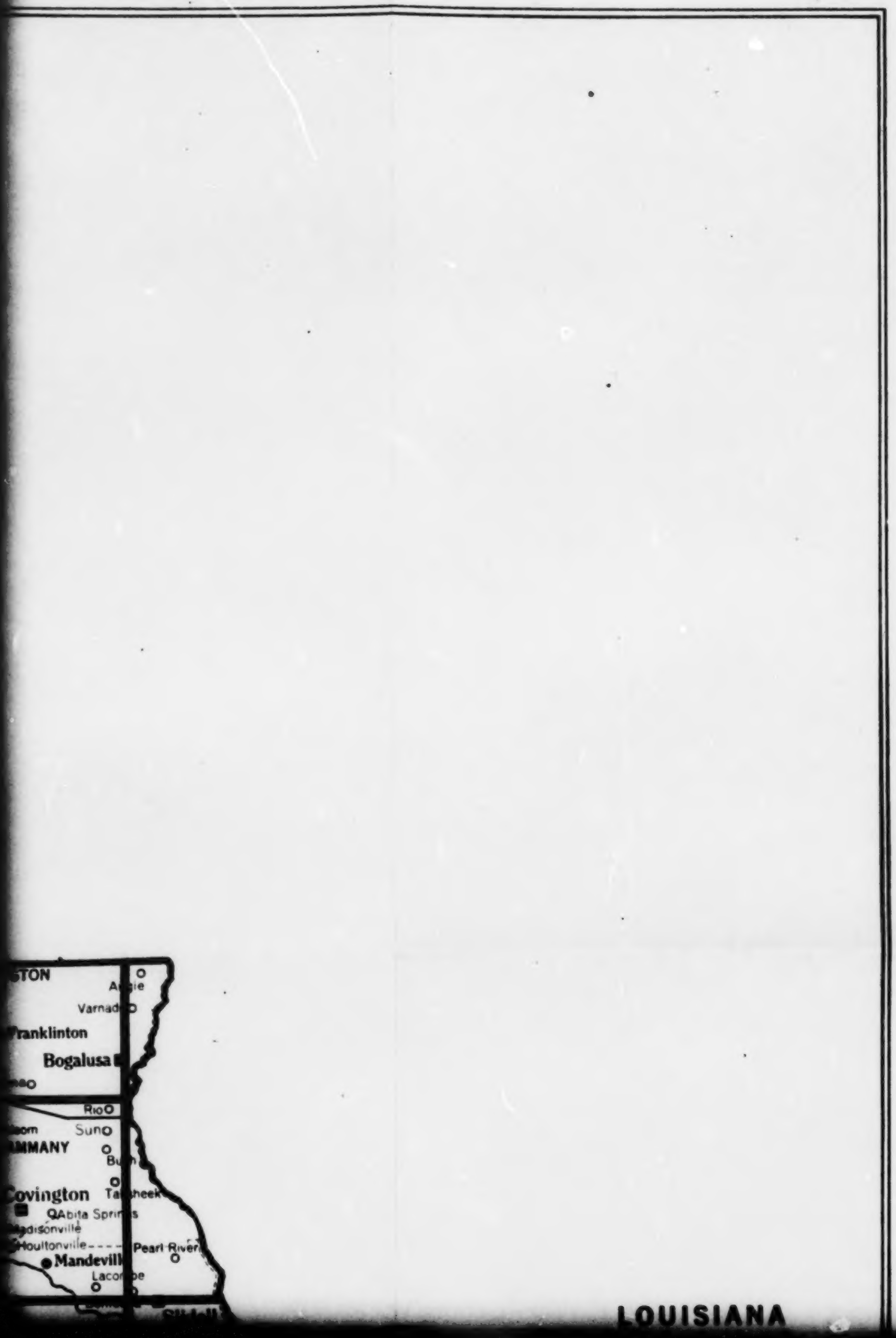
CHARLES
LAKE CHARLES
MUNICIPAL AIRPORT
C


3650
3600
3550
3500
3450
3400
3350
Rodessa
CADDO
Vivian
Hosston
Plain Dealing
Belcher
Alden Bridge
Oil City
Benton
Mooringsport
North Highlands
Blanchard
Bossier City
Shreveport
Springhill
Cullen
WEBSTER
Sarepta
Cotton Valley
Minden
Sibley
Haynesville
Homer
Athens
Summerfield
Spearsville
Lillie
Bernice
Lisbon
Arizona
LINCOLN
Dubach
Marion
Linville
Farmerville
Downsville
Sterlington
Swartz
Haughton
Doyline
Dubberly
Gibsland
Arcadia
Simsboro
Grambling
Ruston
Choudrant
Clay
OUACHITA
Calhoun
W. Monroe
Monroe
Sicard
Brownsville
Bawcomville
Brookwood
Forbing
Taylortown
Fryeburg
BIENVILLE
Bienville
Ringgold
Castor
JACKSON
Ansley
Quitman
Hodge
Jonesboro
Eros
Chatham
Bosco
CALDWELL
Frierson
Caspiana
Gloster
RED RIVER
Kingston
Halls Summit
DE SOTO
Grand Cane
Saline
Ashland
WINN
Riverton
Columbia
Mansfield
S. Mansfield
Logansport
Oxford
Benson
Coushatta
Lake End
NATCHITOCHES
Campti
Powhatan
Goldonna
Calvin
Joyce
Winnfield
Clarks
Grayson
Kelly
Standard
Olla
Urania
LA SALLE
Tullos
Zenoria
SABINE
Converse
Pleasant Hill
Natchitoches
Marthaville
Robeline
Provencal
Noble
Zwolle
Atlanta
Rochelle
GRANT
Montgomery
Good Pine
Trout
Jena
Many
Fisher
Florien
Dry Prong
Colfax
Marco
Galbraith
Lena
Pollock
Nebo
Zimmerman
Boyce
Tioga
Kurthwood
Hornbeck
Hutton
RAPIDES
Wilda
Pineville
Alexandria
Lakeside
Wardville
Kolin
Samtown
Alexandria Southwest
Anandale
Toro
VERNON
Anacoco
Slagle
Sieper
Vick
Leesville
Newllano
Woodworth
Lecompte
Forest Hill
McNary
Longleaf
Glenmora
Cheneyville
Hydropolis
Hessmer
Longbridge
Marksville
Cottonport
Bunkie
Evans
Rosepine
Fullerton
Pitkin
BEAUREGARD
De Ridder
Elizabeth
ALLEN
Oakdale
EVANGELINE
St. Landry
Bayou Chicot
Morrow
Le Moyen
Merryville
Ville Platte
Dry Creek
Longville
Reddell
Mamou
Chataignier
Oberlin
Bancroft
ST. LANDRY
Opelousas
Lawtell
Kinder
Elton
Basile
Eunice
ACADIA
Lewisburg
De Quincy
Church Point
Sunset
CALCASIEU
Perkins
JEFFERSON DAVIS
Fenton
Iota
Starks
Mossville
Moss Bluff
Lake Charles
Carencro
Edgerly
Sulphur
South
Vinton
Maplewood
Hollywood
Westlake
Goosport
Greinwich Terrace
Welsh
Jennings
Roanoke
Crowley
Midland
Mermentau
Rayne
Duson
LAFAYETTE
Ridge
Estherwood
Morse
Hayes
Bell City



CARROLL
EAST CARROLL
Bonita
Bastrop
Mer Rouge
Oak Grove
Lake Providence
Pioneer
Perryville
Collinston
Darnell
Epps
Oak Ridge
Sondheimer
RICHLAND
MADISON
Sicard
Rayville
Holly Ridge
Delhi
Waverly
Tendal
Tallulah
Dehlco
Alto
Mound
Mangham
FRANKLIN
Baskin
Winnsboro
TENSAS
Hebert
Jigger
Gilbert
Wisner
St. Joseph
CATAHOULA
Sicily Island
Waterproof
Harrisonburg
CONCORDIA
Jonesville
Ferriday
Wildsville
Vidalia
Monterey
Parhams
Acme
Bordelonville
Mansura
Moreauville
Simmesport
W. FELICIANA
EAST FELICIANA
ST. HELENA
WASHINGTON
Mt. Hermon
Angie
Varnado
Tunica
Norwood
Wilson
Clinton
Kentwood
Tangipahoa
TANGIPAHOA
Franklinton
Plaucheville
Jacoby
Lettsworth
PTE. COUPEE
Bains
Jackson
Greensburg
Bogalusa
Big Cane
Batchelor
St. Francisville
Wilmer
Roseland
Amite
Zona
Palmetto
Slaughter
Melville
New Roads
E. BATON ROUGE
Zachary
Montpelier
Gullett
Folsom
Rio
Sun
Washington
Fordoche
Jarreau
Baker
LIVINGSTON
Independence
ST. TAMMANY
Port Barre
Lottie
Livonia
Scotlandville
Fountain Place
Livingston
Tickfaw
Natalbany
Bush
Opelousas
Krotz Springs
Denham Sprs.
Albany
Hammond
Robert
Covington
Talisheek
Leonville
Maringouin
W. BATON ROUGE
Port Allen
Baton Rouge
Holden
Abita Springs
Grand Coteau
Rosedale
Springville
Madisonville
Arnaudville
SAINT MARTIN
Grosse Tete
Frost
Springfield
Ponchatoula
Houltonville
Pearl River
Addis
Port Vincent
Bayou
Mandeville
Catahoula
IBERVILLE
Plaquemine
Lacombe
St. Gabriel
ASCENSION
Slidell


STON
Varnado
Franklinton
Bogalusa
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Abita Springs
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Houltonville
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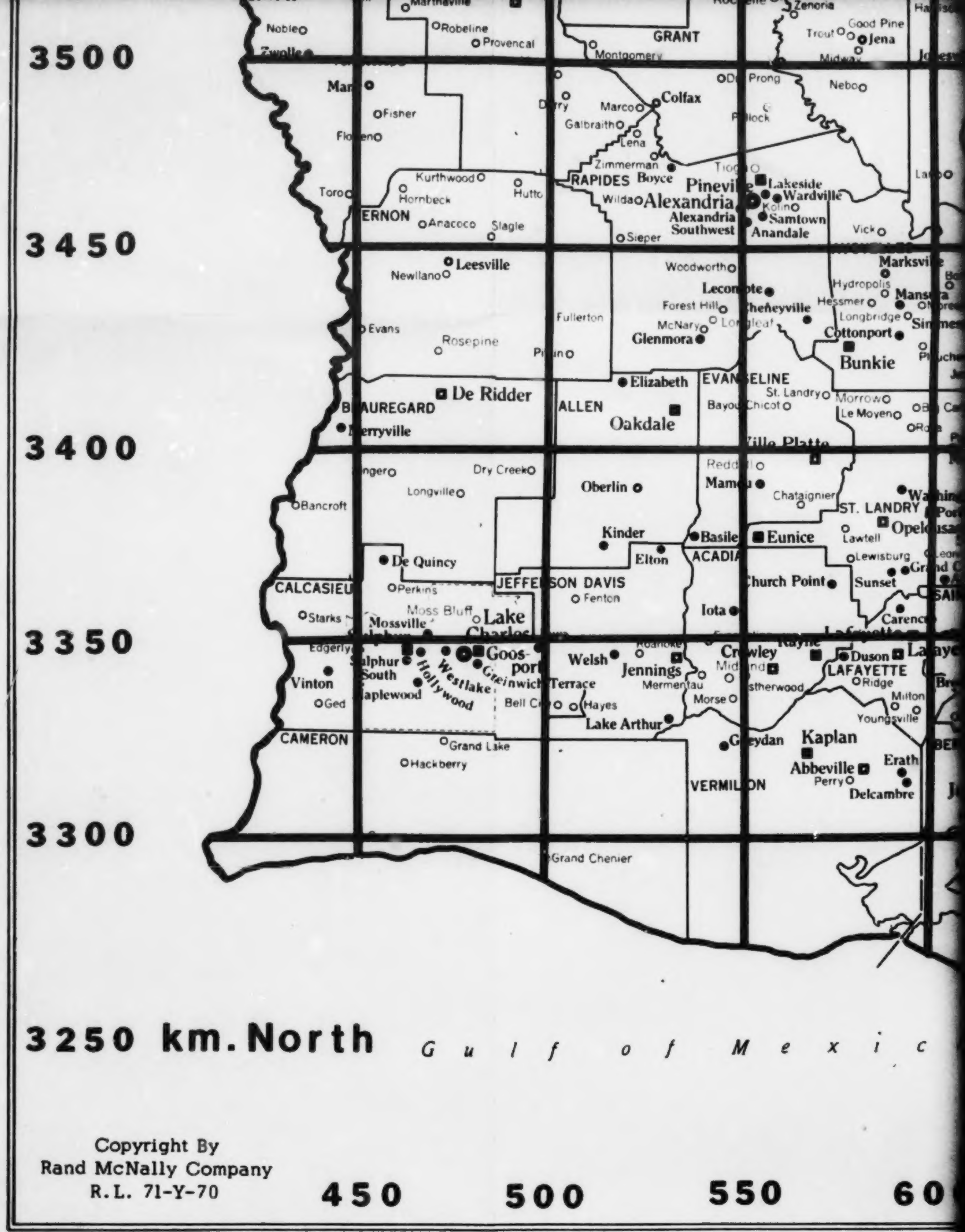
Pearl River
Lacombe
Slidell
LOUISIANA


3500
3450
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3250 km. North
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Gulf of Mexic
Noble
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Montgomery
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Good Pine
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Midway
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Colfax
Marco
Galbraith
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Nebo
Zimmerman
RAPIDES
Boyce
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Hornbeck
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Toro
ERNON
Anacoco
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Wilda
Alexandria
Alexandria Southwest
Sieper
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McNary
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Bunkie
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Rosepine
Fullerton
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St. Landry
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Starks
Moss Bluff
Lake Charles
Mossville
Iota
Edgerly
Sulphur
Sulphur South
Maplewood
Hollywood
Westlake
Greinwich
Goosport
Welsh
Jennings
Roanoke
Crowley
Midland
Rayne
Duson
LAFAYETTE
Ridge
Milton
Youngsville
Vinton
Ged
Terrace
Bell City
Hayes
Mermentau
Estherwood
Morse
Lake Arthur
CAMERON
Grand Lake
Hackberry
Gueydan
Kaplan
Abbeville
Perry
Erath
Delcambre
VERMILION
Grand Chenier

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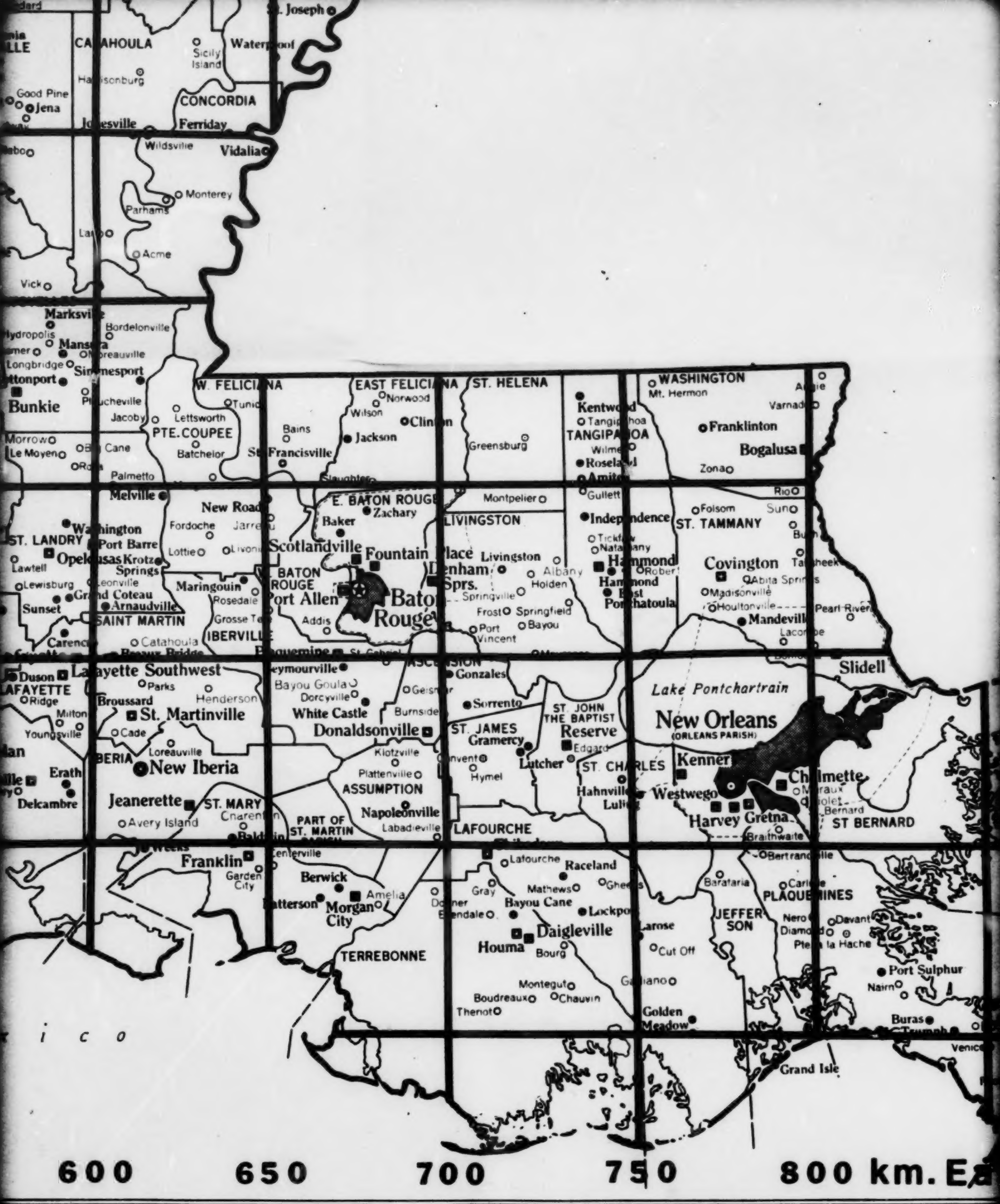
St. Joseph
CATAHOULA
Sicily Island
Waterproof
Harrisonburg
Good Pine
Jena
CONCORDIA
Jonesville
Ferriday
Wildsville
Vidalia
Monterey
Parhams
Larto
Acme
Vick
Marksville
Bordelonville
Hydropolis
Mansura
Moreauville
Longbridge
Simmesport
Cottonport
Bunkie
Plaucheville
Jacoby
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Big Cane
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Batchelor
Palmetto
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Greensburg
Kentwood
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Abita Springs
Madisonville
Houltonville
Mandeville
Lacombe
Pearl River
Slidell
Duson
Lafayette
Southwest
LAFAYETTE
Ridge
Broussard
Parks
Henderson
Milton
Youngsville
St. Martinville
Cade
Loreauville
Plaquemine
St. Gabriel
Seymourville
Bayou Goula
Dorcyville
White Castle
ASCENSION
Gonzales
Geismar
Sorrento
Burnside
Donaldsonville
ST. JAMES
Gramercy
Lutcher
Convent
Hymel
ST. JOHN THE BAPTIST
Reserve
Edgard
Lake Pontchartrain
New Orleans
(ORLEANS PARISH)
Kenner
ST. CHARLES
Hahnville
Luling
Westwego
Harvey
Gretna
Chalmette
Meraux
Violet
St. Bernard
ST BERNARD
Braithwaite
IBERIA
New Iberia
Erath
Delcambre
Jeanerette
Avery Island
ST. MARY
Charenton
Baldwin
Klotzville
Plattenville
ASSUMPTION
Napoleonville
PART OF ST. MARTIN PARISH
Labadieville
LAFOURCHE
Franklin
Centerville
Garden City
Berwick
Amelia
Patterson
Morgan City
Lafourche
Raceland
Gray
Mathews
Gheens
Bayou Cane
Lockport
Donner
Ellendale
Houma
Daigleville
Bourg
TERREBONNE
Larose
Cut Off
Barataria
Bertrandville
Carlisle
PLAQUEMINES
JEFFERSON
Nero
Davant
Diamond
Pte a la Hache
Port Sulphur
Nairn
Montegut
Boudreaux
Chauvin
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Galliano
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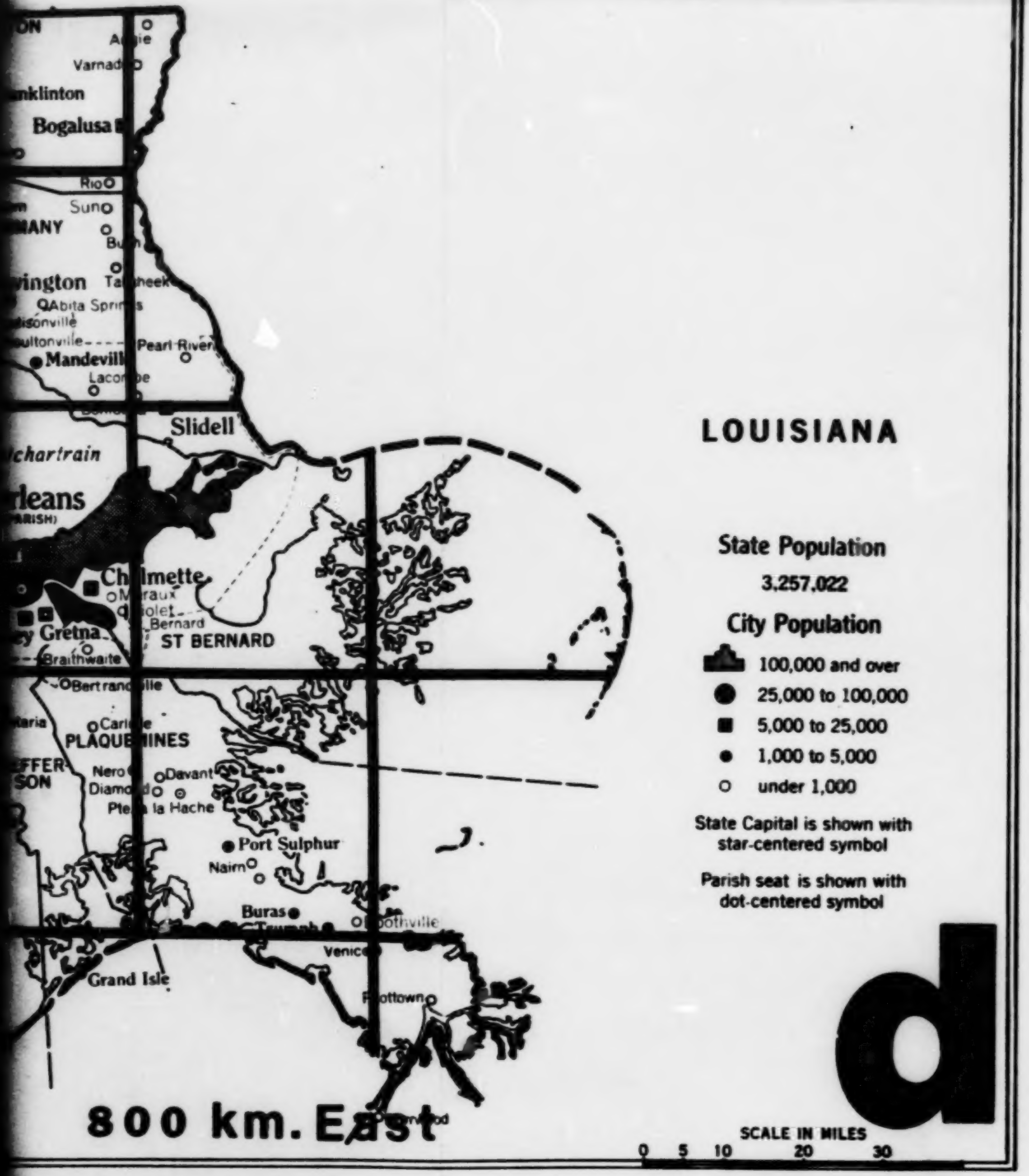
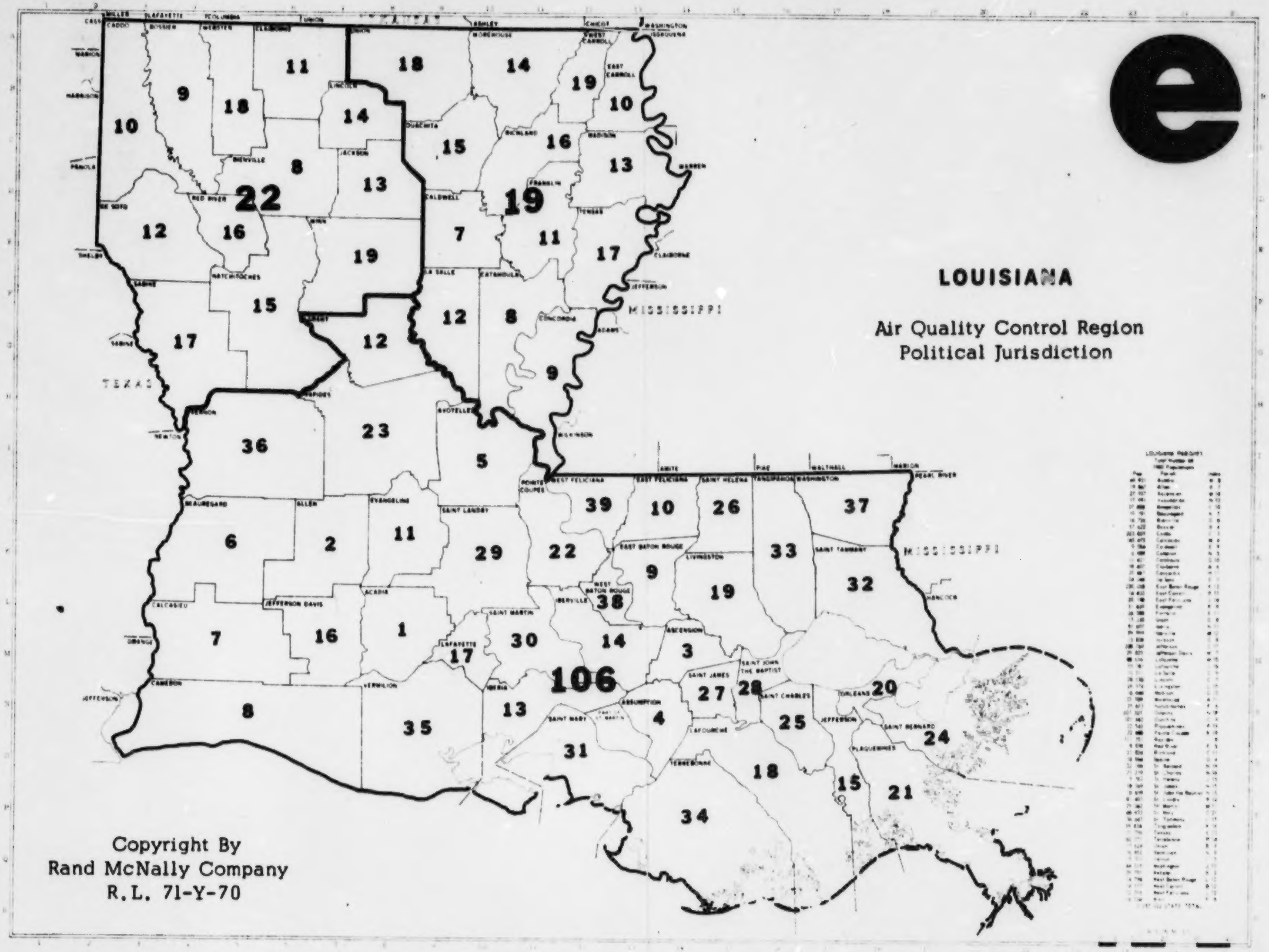

LOUISIANA
State Population
3,257,022
City Population
100,000 and over
25,000 to 100,000
5,000 to 25,000
1,000 to 5,000
under 1,000
State Capital is shown with star-centered symbol
Parish seat is shown with dot-centered symbol
SCALE IN MILES
0
5
10
20
30
d
800 km. East
Varnado
Bogalusa
Rio
Sun
Bush
Abita Springs
Pearl River
Mandeville
Lacombe
Slidell
Chalmette
Meraux
Violet
St Bernard
ST BERNARD
Gretna
Braithwaite
Bertrandville
Carlisle
PLAQUEMINES
Nero
Diamond
Davant
Pte a la Hache
Port Sulphur
Nairn
Buras
Triumph
Boothville
Venice
Pilottown
Grand Isle



22
19
106
TEXAS
MISSISSIPPI
ARKANSAS

LOUISIANA

Air Quality Control Region
Political Jurisdiction

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